July, 1947

EDISON ELECTRIC INSTITUTE BULLETIN

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THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

April, 1946-1947

SOURCE AND DISPOSAL OF ENERGY (In Kilowatthours)—MONTH OF APRIL

	1947	1946	%
GENERATION* (Net)			
By Fuel Burning Plants	13,216,239,000	10,797,128,000	+22.4
By Water Power Plants	7,287,486,000	6,680,358,000	+ 9.1
Total Generation	**20,503,725,000**	**17,477,486,000**	**+17.3**
Add—Net Imports Over International Boundaries	121,307,000	161,978,000	−25.1
Less—Company Use	138,301,000	130,617,000	+ 5.9
Less—Energy Used by Producer	414,472,000	171,895,000	.....
Net Energy for Distribution	**20,072,259,000**	**17,336,952,000**	**+15.8**
Losses and Unaccounted for	2,407,297,000	2,103,532,000	+14.4
Sales to Ultimate Customers	**17,664,962,000**	**15,233,420,000**	**+16.0**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of April 30th			
Residential or Domestic	30,253,289	28,651,839	+ 5.6
Rural (Distinct Rural Rates)	1,440,260	1,270,646	+13.3
Commercial or Industrial:			
Small Light and Power	4,791,166	4,506,461	+ 6.4
Large Light and Power	181,010	166,847	
Other Customers	128,663	119,818	+ 7.4
Total Ultimate Customers	**36,794,388**	**34,715,611**	**+ 6.0**
KILOWATTHOUR SALES—During Month of April			
Residential or Domestic	3,571,875,000	3,094,409,000	+15.4
Rural (Distinct Rural Rates)	421,408,000	328,176,000	+28.4
Commercial or Industrial:			
Small Light and Power	3,070,169,000	2,594,882,000	+18.3
Large Light and Power	9,264,496,000	7,916,089,000	+17.0
Street and Highway Lighting	178,375,000	174,068,000	+ 2.5
Other Public Authorities	494,452,000	482,983,000	+ 2.4
Railways and Railroads:			
Street and Interurban Railways	396,350,000	374,434,000	+ 5.9
Electrified Steam Railroads	221,571,000	216,385,000	+ 2.4
Interdepartmental	46,266,000	51,994,000	−11.0
Total to Ultimate Customers	**17,664,962,000**	**15,233,420,000**	**+16.0**
Revenue from Ultimate Customers	**$310,762,400**	**$278,447,400**	**+11.6**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—for 12 months ended April 30, 1947			
Kilowatthours per Customer	1,368	1,276	+ 7.2
Average Annual Bill	$43.23	$42.62	+ 1.4
Revenue per Kilowatthour	3.16¢	3.34¢	− 5.4

(*) By courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 15 JULY, 1947 No. 7

Recent Rate Trends and Rate Research Committee Activities

By E. N. Strait

Chairman, Rate Research Committee, EEI, and Manager, Rate and Research Division, Public Utility Engineering and Service Corporation

A Paper presented at the open meeting of the Rate Research Committee at the Fifteenth Annual Convention of the EEI, in Atlantic City, N. J., June 2, 1947

THE WORD "trends", as related to the matter of rates, could be very broad indeed. It could allude to the trend of factors or circumstances affecting rates; it could refer to the trend of the level of rates—upward or downward; it could imply the trend of rate design. If I were going to discuss this subject at length, I might regret the unqualified form in which the word got into my topic. However, I shall attempt only a few observations on some trends in relation to rates, as they appear to me at this time.

Trend of Rate Levels

Prior to the late war, the electric industry had a record, during a considerable period, for a downward tendency in its average rate level, due partly to increased efficiencies and partly to decreased cost on account of increased volume. During the war, the downward trend of rates was largely arrested. This was due mostly to increase in taxation as it became a war policy of the government to absorb as Federal revenue through taxes most of the increase in business profits. Therefore, with increased earnings resulting from increased electric utility business during the war, increased taxes occurred in lieu of rate reduction which otherwise most likely would have been made, since prices and wage rates in the industry did not greatly increase. However, during that time, some electric rate reductions or their equivalent, were made, particularly at the instance of some regulatory bodies, with the distinct object of diverting potential excess profits taxes to the benefit of the customers.

MR. STRAIT

After the close of the war and when the excess profits tax was removed, a number of important rate reductions were made, utilizing for that purpose that component of earnings which was released from expenditure by the elimination of that tax. On the other hand, various regulatory commissions recognized the probability of future reduction in the earning power of the public utilities due to the impending increase in cost of utility service which was expected to arise from relaxation of government control of prices and wages and from expected decrease in volume of business following the war. While peacetime volume of business remained higher than was anticipated, material increases in prices and wages have occurred. The heavy wave of rate reductions following the war, therefore, proved to be only temporary.

High Cost Effects

We are also faced with the future effect of construction costs at present high price levels. The downward movement in rates has now generally tapered off but, with increasing sales, some decline in revenue per kilowatthour has continued, due to the graduated price level of the rate blocks. Now there is question whether an upward swing in rates will not be necessary due to the change in economic conditions. The serious effect of increase in wages in the telephone industry, in which the cost of labor constitutes so large a proportion of the total cost of doing business, already has been plainly observable to all.

While I do not consider myself clairvoyant in the matter of forecasting the future electric rate situation as one ought to be, to be sure of hitting things just right, still I think there are some important indications which you and I can see quite clearly. We know that prices and wages are on a materially higher level than they were before. We know that this raises the operating cost of service of the present volume of business, and it increases both the capital cost and the operating cost of added business for which new facilities must

be provided. Since the cost of replacements now is also, generally, at a higher level than original cost, replacements, as they occur, require more than the reserves provided for them and, thus, increase the capital cost in the case of the present sales volume. On top of all of this is the fact that, generally, as a result of conditions which began during the war, electric utility companies do not have sufficient capacity to provide the power reserves they need. Expansion of capacity for this purpose will increase the construction, capital and operating costs per dollar of revenue. Another thing is the possible increase in interest rates on future financing, depending, among other things, on the extent to which the government relaxes its control of the money market.

Tax Reductions

On the other side of the ledger we have had some reduction in the tax rates, first in the case of elimination of the excess profits tax and now, apparently, in the case of the normal Federal income tax.[1] How much this will be offset by increases in local taxes we do not know but, at any rate, as the matter stands now, there seems to be a gain by reduction in taxes.

We also know that peacetime business has held up much better than was expected, so much so that, on the score of load, electric utility companies have not been getting new capacity installed fast enough to provide the capacity they require. Of course, some load factors are not as good as under wartime conditions, but at any rate business is better than was expected. On this other side of the ledger it appears that we can count also the fact that the experience of the industry has been that, with growing load conditions during periods of stable prices and wages, the unit costs and the rates of the electric industry have steadily declined.

Taking these opposing factors into consideration, it is my feeling that, unless a serious recession occurs in the volume of business generally, the electric utility industry will weather the changing economic situation without heavy increases in its rates but that it will be some time before any steady downward trend of the general rate level sets in again.

[1]The tax reduction bill was passed by Congress but was vetoed by President Truman on June 16, 1947, and the veto was sustained. Many think a tax reduction bill will have a better chance of becoming law in 1948.

Trend of Rate Design

As to the trend of rate design and rate provisions, there is a constant tendency toward greater simplicity, particularly observable in periods of declining cost of service. It should not be forgotten that many of the extensive utility systems of today are made up of the consolidation of numerous small and separately operated utility companies of former years and that each of them, under its separate management, had adopted rate schedules which seemed to fit its special, separate situation. Large utility systems, particularly those which cover extensive areas and now embrace many formerly separate units, have found it necessary to work out difficult problems of unification of rate schedules, often entailing much loss of revenue to accomplish it. Comparison of the rate schedules now in effect with those effective prior to consolidation of small systems will probably show in every instance vast improvement as to the number of schedules employed, their level and their general characteristics. With much of the work of eliminating differences in schedules in different parts of the same system out of the way, greater opportunity is opened for further simplification of various remaining schedules.

How far simplification of rate schedules can be carried is a matter of the economics of supply and utilization, and this must be examined and decided in each instance by those responsible for the utility's successful operation. It is my own view that, with the development of greater and greater coverage of the service areas occupied and of greater and greater saturation of the electric distribution systems supplying the service areas, greater opportunities arise for elimination of some of the features which have been appended to rate schedules in various instances in an effort to make the service charges conform closely to individual conditions. In other words, I think that changing conditions tend somewhat toward simplification through more extensive use of averages to fit general conditions. However, it seems quite apparent that, regardless of any possible broad reduction in unit costs due to changes in construction, operating efficiency, load saturation, or other causes, the general economic principles in the electric industry remain about the same.

Reduced costs naturally open the door further to new types of utilization of electric service that demand such lower costs if the new uses are to come into existence. Nevertheless the rate-making principles of cost of supply and value of service no doubt retain their usual nature regardless of the cost level. While we might suppose that lower costs of utility service will permit considerable simplification of rates we are likely to find that correspondingly lower costs of substitute service and the low price requirements of new types of utilization interject the same kind of economic problems as before. For this reason, it seems to me, we should not expect radical changes, so far as simplicity is concerned, in fundamental factors of rate schedules which are designed to make the schedules properly related to the characteristics of loads which are served. Our aim should be to examine carefully the character of all our rates, discarding those features which need have no place in the system of electric service charges under present-day conditions while retaining those basic factors of rates which are inherent in our business.

Committee Activities

Much of the activity of the Rate Research Committee is carried on by special subcommittees to whom are assigned for research and report important subjects on rates or related matters in which the electric industry is interested. The affairs of subcommittees comprise an important part of the program of Committee meetings. At such times opportunity occurs to the entire membership for discussion of progress reports and for action on final reports of the subcommittees. Final reports on some of these matters are placed on file at the Institute's headquarters for reference by executives of member companies, depending on the nature and importance of the subject and on the progress made in research in relation to it. It would be well for those who are interested in electric rates to bear in mind, when rate problems occur, that the Institute's office may have available, through the activity of the Rate Research Committee and the work of the Institute's staff, helpful information on the particular subjects in which they may be interested.

Another important phase of regular Committee meetings is roundtable discussion of current rate subjects not under investigation by subcommittees but which have been placed on the program with leaders assigned in advance to open the discussions. This affords another avenue for a general exchange of views on matters of common interest, and

often such discussions lead to the appointment of subcommittees to conduct further inquiry into important subjects.

It would be a serious omission not to mention as important the fact that, at practically all meetings, subjects not listed in the program are brought up for discussion by the members themselves or by the Chairman as a result of his current contact with members. These subjects generally relate to problems which are at the moment engaging the attention of individual members, and on which an exchange of experience and views is desired.

Recent Committee Investigations

During the past few years the Rate Research Committee has engaged in an extensive series of investigations of rate subjects through its subcommittees, in which every member of the Committee has participated and practically every one has headed an investigation. The matters covered include such subjects as:

Application of Rates to Combined Residential and Commercial Customers.

Application of Rates to Multiple Dwelling Units.

Uniformity of Rate Schedules for Commercial Service.

Uniformity of Rate Schedules for Residential Service.

Uniformity of Rate Schedules for Large Power Service.

Rates for Municipal Light and Power.

Residential Excess Charges.

Rural Rates and Extension Plans.

Wholesale Rates to Rural Cooperatives.

Excess Profits Taxes as Related to Rates.

Rates for Standby and Auxiliary Service.

Power Factor Correction.

Demand Intervals.

Rules and Regulations.

Rates for Street and Highway Lighting.

Demand Metering for Commercial and Retail Power.

Reports on some of these problems have been completed and are on file for reference. Others are still under investigation.

Current Inquiries

New investigations in progress during the past year include rates with respect to electric welder service. This deals particularly with small welders, a subject of general interest to the industry, on which a subcommittee report has been completed. Other new subcommittee inquiries, not finished as yet, relate to limitation of lighting in industrial rates, electric rates in relation to residential indoor climate, electric rates in relation to commercial indoor climate, procedure in rate application in relation to converted multiple tenancy industrial and housing projects, and profit sharing and sliding scale rate plans.

In the case of the Subcommittee on Limitation of Lighting in Industrial Rates, considerable research with respect to current practices has been completed and a report on the subject may be expected during the ensuing year.

"Indoor climate" will be recognized as a short designation referring to space heating and air conditioning and, as such, it embraces problems relating to the use of the heat-pump. The subcommittees on both the residential and commercial phases of this rate matter have carried on preliminary activities and have submitted progress reports to the Committee. However, wartime conditions, including lack of adequate test-projects and necessary metering equipment available to member companies, have hampered progress in the research by these Subcommittees. It is hoped that changing conditions and cooperation of member companies will soon make available to these Subcommittees comprehensive data upon which instructive reports on these important matters can be prepared.

New Rate Situations

The problem of properly dealing with the rate situation presented as a result of government disposition of large factory projects, some of which will be occupied by more than one peacetime industry, and the rate situation in connection with housing projects in process of disposition by the government, are matters which recently commanded the attention of the Committee. No regular meeting of the Committee has been held since the Subcommittee on this matter was appointed to investigate it.

Profit sharing and sliding scale rate plans constitute a subject of growing interest to the industry. The regulatory laws of many of the states permit rate plans of this kind in varying degrees and there are various instances in which such plans have already been used. The Subcommittee on this subject is actively engaged in an examination of the problem involved and we may look for an informative and helpful report from them concerning it.

Importance of Rates

The importance to the electric industry of all matters which affect its charges for service can hardly be over-emphasized. Safety and good service undoubtedly come first but almost all other phases of the utility system's affairs, whether finance, construction or operation, need to be considered in relation to their effect on the problem of rates. Even the necessity of safety and good service has a bearing on rates through the cost necessary to attain them.

Through the medium of rates, the utility collects the revenues necessary to meet obligations to its owners, lenders, workers, suppliers and taxers. Rates must be adequate to cover the cost of service represented by all of these obligations if good service is to be supplied. Rates also must be low enough to meet the value of service to customers, or customers will find a substitute service or do entirely without it. Rates, therefore, must be promotional in character so as to tend to obtain the customer's business in the first place and also to encourage him to extend the use of electricity to his potentially expandable requirements. Rates, furthermore, should be simple—at least simple enough to avoid obstruction to electric business development and to avoid lack of harmony between the customer and the utility.

In all of these requirements, management that is successful has a vital interest. Taken together, these requirements, even in the simplest situations, present a complex problem of the economics of supply and utilization and of customer-relations. Variations in the different types of production and distribution and differences in the load characteristics of different types of utilization of electricity multiply the complexity of the rate problem. As a rule, therefore, rate-making requires, besides an understanding of the economics of the utility business, considerable good judgment and skill in compromising and harmonizing the requirements to attain any material degree of simplicity of rates. How far simplification of rates can well go depends upon how much yielding can safely occur, in each utility situation, between the characteristics of the cost of supplying service to individual cus-

(*Continued on page* 273)

An Engineering News Report

By J. W. Parker
President, The Detroit Edison Company

An address before the Fifteenth Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 4, 1947

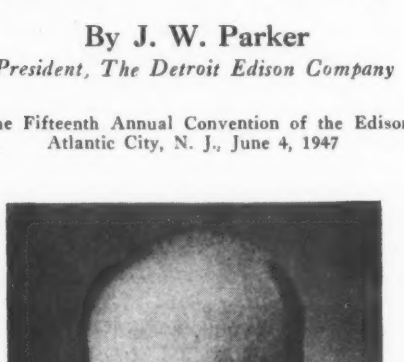
FOR many years the electric light and power business has been considered to be non-competitive and therefore, in effect, monopolistic in character. For that reason the industry was brought under state regulatory bodies and later in some circumstances, under the Federal Power Commission, in order to safeguard the public against unfair practices which might grow up in the absence of competition.

Utility Competition

Today our industry is very definitely competitive—even more so than as if our companies were competing directly with each other. Not only do regulatory bodies compare the performance of the several companies and insist that the economies practiced by each be put into effect by the others, but we also find ourselves potentially in competition with governmentally-owned and operated systems exempt from much of the taxation we must bear and often backed by the Federal Government with its advantageous borrowing powers. We face no mean competition. While in the past the incentive to improve operating and engineering practices arose in no small degree from an understandable rivalry between the managements of companies operating under similar circumstances, today the utmost of economy is imperative in both operation and investment.

Both the management and their engineering staff must cooperate to that end, each according to their capacities, not only to maintain the service at the level most acceptable to the public but also to accomplish this at a price at least as low and, if possible, lower than as if supplied by a potential competitor.

These efforts will vary all the way from a defense against unfairly imposed government burdens such as discriminatory taxation, which is certainly the responsibility of management, to the most economical employment of the apparatus of the business, in which it is just as certainly the responsibility of our engineers to engage their companies' attention.



MR. PARKER

Accordingly, it is the purpose of this paper to enumerate what seems to the author the most significant engineering developments presently affecting our business and the most important improvements in operational practices.

Extra High-Voltage Transmission

Stimulated in large part by the government's huge river development and water power program, there has arisen a very considerable interest in the bulk transmission of power at voltages in excess of the 287 kv now employed in the transmission of power from Boulder Dam to the California coast.

However, there are in this country relatively few situations such as exist in the Scandinavian countries and in China, Africa, and South America where because of prohibitive cost of fuel, hydraulic power must of necessity be employed, though generated at great distances from the load centers. These combinations of remote water power and high fuel cost make it easier to justify straight-away transmission over greater distances and possibly at higher voltages than are needed in this country. Accordingly, it is the opinion of most of our engineers that any power developments now anticipated in this country can be handled within the limits of 350 kv to 375 kv, values to which our present methods and experience can reasonably be extended. However, to make commercial use of these somewhat higher voltage levels it is necessary to extend our knowledge considerably beyond those actual values. The American Gas and Electric Company with the aid of several equipment manufacturers has undertaken to do this and is setting up an experiment consisting of a short length of transmission line with certain terminal equipment to investigate phenomena up to 500 kv at 60 cycles. They expect to have this experiment in operation in the summer of 1947.

"Compensating" Lines

As is usually the case, there are countervailing factors involved in this question. At these higher voltage levels the cost of lines and related terminal equipment increases very rapidly with the increase in voltage. It therefore involves an economic balance between the first cost and the transmission losses of the several higher voltage lines necessary to give a sufficiently reliable supply, and the larger number of lower voltage lines of equivalent capacity. Each case has to be considered on its merits.

There has been much talk about "compensating" lines to increase their power limit at any given voltage and hence their feasible transmitting distance. While compensated lines have been worked out experimentally in some detail, experience with such methods and devices is as yet fairly limited. Whether or not it will be economical to use them will have to be determined by further experience.

The use of direct-current transmission is a possibility which is now being seriously considered in Sweden and France and was under development by the Germans during the war. It has not yet reached the state of practical

application. The equipment for conversion at the terminals has not been developed for the voltages and capacities that would be necessary to justify this radical departure from present practice. There are other problems posed by the reversal of power flow, and the development of circuit-interrupting and protective devices, which are at least obstacles to the general use of direct-current for interconnections. It would appear to lend itself better to long distance point-to-point transmission rather than in the elements of a grid where reversal of power flow and ability to receive or supply power at intermediate points are both important. Its proponents claim lower costs where very large amounts of power must be transmitted for very long distances, and if underground transmission is required for military or other reasons, it apparently has the advantage of simpler and lower cost cable than would be necessary for alternating current. Much more study and experience are needed to determine the economic place of direct-current transmission or whether it will ever justify itself under conditions other than those of high capacity and long distance.

Extra High Voltage Grids

From time to time the suggestion has been made that extra high-voltage grids might profitably be superimposed on the existing utility systems to inter-connect the major regional centers and to coordinate the proposed river valley developments with steam generating centers. There appears to be some question whether or not that situation will actually work out to best advantage in that way. Such regional interconnections would be in considerable contrast with the present practice of interconnecting contiguous systems by lower voltage lines of moderate capacity. That practice, now in most common use, is predicated upon the existence of fairly comprehensive transmission networks lying adjacent to one another and with no great gaps between. That condition is the one most frequently existing east of the Mississippi River and partially prevails even some distance to the west of the River. Consider the recent performance of the interconnected network east of the Mississippi, when because of flood conditions the TVA was deprived of some 500,000 kw of generating capacity without resulting loss of service to any customers except a few having dump power contracts. In the light of that experience and others similar to it, it is a serious question whether or not an overlying system of extra high-voltage trunk lines can be justified except conceivably on the basis of military necessity for the protection of large manufacturing centers. It appears doubtful furthermore that they could be justified on the grounds of any operating savings to be had. However, despite this opinion that an inter-regional trunk system cannot now be justified, the possibility that changing circumstances may some day change this conclusion should be kept clearly in mind and the proper place of existing utility networks in relation to an inter-regional system demonstrated.

Power Plants

Opportunities for economical improvement in steam power plant techniques lie in the better management of the combustion of the fuel and, in the case of solid fuels, in the better disposal of the solid refuse of coal; better proportioning and disposition of the heat exchanger surfaces of the boiler, economizers and preheater directed to much the same purpose; and the choice of a more efficient heat power cycle through employment of a higher initial temperature and pressure or by elaboration of the heat cycle. The same opposing influences which have always operated, continue to determine the fundamental design of plant under the circumstances obtaining in each case—the tendency to elaborate for the sake of higher thermal efficiency and the countervailing commonsense purpose to simplify in the interests of lower first cost and, generally speaking, increased reliability. In recent years the latter purpose has largely prevailed, resulting in the employment in many plants representative of American practice, of the simple regenerative cycle in tandem turbines with initial steam temperature not exceeding 950 F and pressures of 1400 psi or somewhat less.

While a great deal of experimentation is continually going on toward the development of steel alloys suitable for superheater, piping and turbine parts at high temperature and stress, the maximum temperature at which any existing materials can be used does not exceed 1050 F. For the simple regenerative cycle, the corresponding initial pressure is about 1600 psi. High coal costs brought about by wartimes have been the incentive for adopting these higher temperatures and the high-priced materials necessitated by that choice. A few installations now in course of construction are designed for a temperature range of 1000 F to 1050 F.

An alternative to the simple cycle is the reheat cycle with its more complicated turbine and boiler arrangement whereby steam is withdrawn at an intermediate stage, reheated in a hot-gas or steam heat-exchanger and returned to the turbine. Use of this cycle must be justified by the adoption of very high initial steam pressure, as in the 2400-lb boiler plant of the American Gas and Electric Company's Twin Branch Station. Two such plants are now in operation using 950 F and 2400 psi as the initial temperature and pressure. Continued high coal costs would undoubtedly bring about more frequent employment of such a cycle, quite likely at a temperature exceeding 950 F.

Consider now the combustion and fuel side of the boiler plant:

Broadly speaking, the problem is one of designing a combustion system such that the boiler can be run as continuously as the turbine and without excessive dirt or ash being given off by the stacks. Such continuous performance makes more practicable the installation of one or two boilers directly connected to a single turbine, which in turn keeps the cost down by eliminating spare boilers and by minimizing the amount of costly cross-connection piping and valves.

Ash Disposal

The handling and disposal of the ash constitutes a major problem. If such continuous long-time boiler operation is to be assured, it is necessary that the ash particles carried from the furnace into the banks of boiler and superheater tubes and through the gas passages of the boiler, shall be cool enough not to adhere to the tubes and walls, and that the amount of such ash carried over shall not be sufficient to require excessive soot blowing or cleaning, or excessive cost for equipment to remove dust and ashes from the gases going to the stacks. By working toward these objectives present-day boiler plant design has progressed to a point where, with the help of what cleaning can be done with the boiler in operation, and during the off-peak hours and over weekends, boilers can be kept "on the line" almost indefinitely which permits of very substantial savings as already indicated.

Summarizing briefly, the principal technical obstacle to the advance toward low-cost higher-efficiency steam power

plants lies in our limited ability to produce the necessary high-temperature resistant alloy steels at low enough costs.

Such higher efficiencies can be had with the more costly and complicated reheating type of turbine plant when fuel costs are high enough to justify the added plant cost.

Long-time continuous operation of boilers seems assured which should permit of very real savings in boiler and piping investment.

Gas Turbines—For large central station work the gas turbine does not appear to have a competitive place. Thermal efficiencies as high as those of modern steam plants can be obtained with presently available high-temperature alloy steels, and the present limitation to liquid fuels is fast being overcome through research in the application of pulverized coal. Nevertheless, its size is limited, at least for the present, to some 10,000 kw, which makes it generally unattractive for large central station use. It will have a place in situations where smaller sizes are sufficient and particularly where the condensing water supply is inadequate.

Fuels—In the field of fuels there is also a development of some promise; namely, that of the underground gasification of coal. While the practice is reported to be in commercial use in Russia, the initial experiments are only now being carried on in this country by the Alabama Power Company in cooperation with the Federal Bureau of Mines. If successful, the practice should make available large quantities of coal which, for various reasons, cannot now be economically mined. The experiments so far have shown that the underground fires can be safely kept within bounds, and have given some indication of the quantities and quality of gas to be had by several processes. However, considerably more work will have to be done before the economic feasibility of the process can be determined.

Cable

Extra High-Voltage Cable — With the heavily increased power demands of metropolitan centers, there is a marked increase in the use of underground cable at 100 kv and above. While oil-filled cables in ducts, at even higher voltages than 100 kv have been in operation for some years, the trend is now toward placing extra high-voltage circuits in steel pipe. Earlier pipe line cables were oil-filled, but more recently it has been found possible to operate under nitrogen gas at 200 psi. One large gas-filled installation of sheathless 3-conductor cable is in successful operation in this country and others are on order.

There appear to be two reasons for employing gas-filled lines. One is the elimination of a hazard inherent in large quantities of oil, and another the simplicity of gas control apparatus as compared with that for control of oil. It now appears that pipe-type high-voltage cable lines will be quite common, but whether gas or oil filling will finally prove best has yet to be determined.

Extra high-voltage cables have been proven to be very reliable and, if advantage is taken of that reliability to avoid duplication, very substantial reductions can be had in system investment.

High and Medium Voltage Cable—In the field of high and medium voltage self-contained cables the problem continues to be one of sheath integrity. Most any reasonable arrangement of insulation appears satisfactory *provided water can be kept out.* Newer lead alloys show promise and sheaths of thin lead with plastic overlays are being offered to give corrosion protection and at the same time retain, with a minimum of lead, the advantages of a conducting sheath.

One hope of cost saving seems to lie in the possible development of extruded plastic insulation to replace the present wrapped paper insulation. Perfection of both plastic insulating material and the extrusion process will be required, but the savings would appear to justify the effort.

Another possibility of saving is by strict adherence to the newly-developed standard cable ratings and the buying of cable in long lengths. That will permit the manufacturer to achieve at least some measure of mass production for stock, which should permit of price reductions.

Electrical Apparatus

In the field of electrical apparatus the advances are principally those of standardization of designs, reduction in number of standard ratings (with attendant increase in production per rating), and in the "up rating" of existing equipment.

Switchgear—In indoor switchgear the trend is very definitely toward oil-less equipment in all voltage classes to such an extent that the principal manufacturers anticipate a marked reduction in the demand for oil breakers. The reduction of fire hazard is the principal reason for this change.

In outdoor switchgear the development and use of oil-less and oil-poor switchgear, in this country, has been not too popular and there is some feeling that we would do well to go slowly in abandoning the advantages of oil breakers, particularly at the very high voltages. While a few oil-less units have been produced, there have been some operating and maintenance difficulties experienced.

The recent tests on the 230-kv German airblast breaker made on the system of the Bonneville Power Administration may stimulate further interest, but the ability of the breaker to open line charging current was not satisfactory. Another factor which may revive interest in the outdoor oil-less breaker is its military advantage. Oil-filled breakers, when struck by bombs or shells, can cause very destructive fires.

The need for higher interrupting capacities in the medium and high voltage fields is definitely appearing. Recent tests as high as 7 million kva at 230 kv were successfully carried out by the two principal manufacturers at Grand Coulee. Also, recent tests were successfully made up to 3½ million kva in the 138 kv class.

The number of circuit breaker ratings is again being studied and reduced in an effort to keep down development costs and to gain any further economies which may result from greater production of each rating. The EEI-AEIC-NEMA Joint Committee on Power Circuit Breakers is doing excellent work in this field.

Lower Gear Cost Trend

Summarizing, it does not now appear that there is any technical obstacle in the way of producing satisfactory switchgear of any size or operating speed which the industry may need. The present-day problems are largely economic. Not only is the trend toward lower cost gear itself, but there is also a strong tendency toward simplified systems requiring a minimum of switchgear of any kind.

Transformers—Emphasis in the field of large power transformer design is in the direction of auxiliary cooling. Wartime experience with forced oil cooling was very satisfactory and, while there was earlier experience with auxiliary air cooling, that too has been stepped up as a result of wartime experience. The result is a substantial increase in

capacity for a given amount of material, with a worthwhile saving.

The proven high reliability of transformers is well established and there is now a marked trend toward the use of three-phase units. The use of three-phase transformers, without spares, for stepping up generator voltages is becoming common even for very large units. While the failure of such a transformer would shut down the generator, it occurs so infrequently as to make that a fair chance to take, considering the savings to be had.

Although there are no startling advances, the standardization work done in the field of distribution transformers continues to bear fruit.

Substations—The use of factory-assembled unit substations continues to increase with attendant savings, both in cost and in the use of building materials.

Distribution Practice

The expansion of distribution systems to care for heavy-load increases takes two forms. One is an increase in the primary voltage used, and the other is the extension of transmission lines nearer to the load centers and the closer spacing of substations.

In a number of places throughout the country heavy pressure has been exerted to have distribution lines placed underground as protection against hurricanes and other widespread storm outage. Since the cost of even the cheapest forms of buried cable is prohibitive in most situations, attention has been given to the use of aerial cable mounted on poles in a manner similar to that commonly used by telephone companies. The cable manufacturers are offering special assemblies designed for this purpose and a considerable amount of it is being installed throughout the country. While the cost of aerial cable is naturally considerably greater than that of open wire, in many cases there are substantial credits for shorter poles and reduced tree trimming. However, one must also realize that cable failures will result in long outages unless some form of throw-over service can be made available and that may increase costs very materially.

Also, while there is some question as to the measure of protection which aerial cable construction will actually give against calamitous storms, it does offer a very useful means of coping with bad tree conditions and with the growing resistance to the practice of trimming trees to accommodate open wire lines.

What the overall economic balance will be can only be told from experience.

On Customers' Premises—From the power company's point of view the modern home is fast becoming a small industry equipped with a wide variety of machinery and devices for doing housework and for entertainment. One result is a marked increase in the load demand for electricity and that in turn raises the question of the adequacy of the customers' wiring.

Inside Wiring—To meet limitations now imposed by the wiring code, builders of portable appliances must limit the demand of the individual devices to some 1600 watts; whereas, to make many of those devices of maximum usefulness, they should have 2500 to 3000 watts. Under the present code such demands require a special high capacity circuit. In the cost of a new wiring job that may not be too serious, but as an addition to an existing wiring system the cost may be prohibitive.

While we might be able to apply some of the low cost wiring methods worked out for ranges to keep the cost down, the problem is really much broader. Our customers should not be saddled with extra wiring cost until they have been permitted to make full use of their present wiring, and that raises the whole question of code limitations.

The most immediately important aspect of this situation is the extent to which the rating of present wiring can be increased. Most older homes are wired with No. 14 wire and most of the sockets, convenience outlets, and the like, are old. To what extent can these safely be rated up? How much current can be safely carried on a No. 14 code wire? Can larger loads be safely carried on present outlet devices? What fuses or other protective devices and methods are really needed?

In new jobs the question becomes—what can be done to produce wiring supplies and devices of larger capacity at the same or lower cost?

Branch Circuit Protection Joint Committee

These questions are now being studied by the newly-constituted EEI-AEIC Joint Committee on Branch Circuit Protection. They are going into these questions carefully and, as far as possible, are basing their judgment on a careful appraisal of the actual risks involved. The prospect is most encouraging.

Appliances—As I stated earlier, *portable appliances* need more power than the present wiring code permits on an ordinary lighting or convenience outlet. A laundry dryer has a demand of 4 kw; while a roaster, an ironing machine, or a portable heater could make good use of 2.5 kw. The speed and convenience of such larger appliances would greatly enhance their usefulness and appeal.

Water Heater Effect on System Peak

In the field of *fixed appliances* the focus of attention is now on the water heater with its attractive earning power. There seem to be two extreme schools of thought concerning electric supply to water heaters, with several variants lying between them. One extreme considers that if the heater is to pay its way, the heating period must be kept off the system peak. To do so, most companies equip heaters with a clock control mechanism or in a few cases with remote control operated from the load dispatcher's office. While this method does keep the water heater load off the system peak, in neighborhoods with some concentration of water heaters the capacity of the secondary mains, distribution transformers, and perhaps of the primary mains as well, may be set by the water heater load. Thus, certain increment fixed costs would be incurred and should be considered.

The other extreme contends that it is better to allow the water heaters to "come on the line" at any time and thereby eliminate all control mechanism except the thermostat and avoid the use of a booster heater element for the use of which a higher rate must be charged. This school argues that the natural diversity in the use of hot water will prevent enough heaters from coming on at peak times to raise the cost of service beyond what can be collected.

My own company is of the "off peak" persuasion and sells unmetered service on a flat rate per month for each tank size. Our engineers are of the opinion that, if no off-peak control is used, the on-peak demand of water heaters might be such that the generating and transmission costs so added, would make it so much less attractive that it might not pay out at any rate competitive with gas. I believe that I am safe in saying there is a growing feeling in the industry that, considering the rising system and operating costs, it would be well to avoid incurring any substantial amount of generating and transmission equipment costs. Kept thoroughly off

the peak, the water heater is a profitable load builder.

The heat pump has also attracted considerable attention of late. In considering the feasibility of the heat pump, the following should be borne in mind.

1. Unless the cost of heat pump installations can be greatly reduced, there appears little chance that they will work out economically in cold climates.
2. Except where the price for electricity is very low, the operating cost would exceed that of ordinary fuels.
3. There is little daily load diversity between heat pump installations and, if at all generally used, they might well determine the system peak.

In the extreme Southern States where the compressor size for heating would not greatly exceed the size needed for air conditioning, and where summer air conditioning would be required in any event, it is possible that some applications of the heat pump would be commercially feasible. However, it should be borne in mind that it would be likely even then to involve paying some premium for heat. A few full-sized installations have already been made and those seem to bear out the foregoing conclusion.

All things considered, it would appear that any substantial application of the heat pump will probably be limited to the Southern States.

Industry Engineering Standards

There are a number of joint standardizing committees now functioning with the equipment manufacturers, the Bell Telephone systems, and the railroads. Time will not permit discussing them all, but I should like to mention the progress being made by two of them as typical of the excellent work that is being done in this field.

Preferred Voltage Ratings—One of the outstanding industry engineering standards has recently been issued in interim form by the Joint EEI-NEMA Committee on Preferred Voltage Ratings for Systems and Equipment. It is the result of several years' work and covers the agreed-upon preferred voltage ratings from the customer's service voltage to 15,000 volts. In addition to establishing the preferred nominal voltages, it sets up the normal and allowable voltage ranges for each nominal rating. It is hoped that the adoption of such a system of standards will permit a substantial reduction in the number of standard ratings required for industry needs.

Motor Starting Currents—With the advent of air conditioning equipment, automatic laundry machines, and the like, for household use, there comes an increase in the size of motors with resultant motor starting currents in excess of those for which local distribution systems are usually designed.

Accordingly, the pressure is again on the power companies to liberalize their starting current rules, and that means increased investment in secondary mains and distribution transformers. The Joint EEI-NEMA Committee on Motor Starting Currents is now wrestling with this problem in an effort to strike a fair compromise. There is room for a great deal of ingenuity in the resolution of this difficult situation. The stakes are very real.

Conclusion

In conclusion I should like to dwell on two generalizations.

You will note that we are still facing the old problem of balancing the necessity for simplicity and low costs against the desire to elaborate for increased efficiency—with the margin of possible increase approaching constantly closer to the vanishing point.

Also, I believe you will have noted that in almost every case I have been talking about either or both of two fundamental limitations. One is the limitation imposed by the materials found in the earth and the intelligent combination of them. With this one, the engineers of the manufacturers and of our companies are constantly wrestling. The other is the limitation of our economic ability to absorb the products of technical and engineering skill into our living. With this latter one, we are all wrestling—the power industry to give more and more electric service at progressively lower cost—our customers to make their purchasing power cover an ever widening need for goods and services.

Today, the latter limitation is the more stringent, and I think that I am not presumptuous when I say that, in the light of our present technical knowledge and the promise of its rapid advance, we can engineer and produce almost anything people can afford to use.

Kansas City Power & Light Employees Design New Meter Test Rack

A NEWLY designed turret-top test rack for meters introduces assembly line methods to utility laboratories and increases the daily output per man by approximately 300 percent, if experiments at the Kansas City Power & Light Company are a criterion for other utilities. The new meter test rack was designed by three Kansas City Power & Light employees: Laurence W. Jones, foreman of the meter shop; Owen Hetzler, meter tester, and C. A. Sloan, foreman of the laboratory. The three have spent more than a year perfecting the new design in the company laboratory.

Anticipating that the moratorium on meter testing approved by the Public Service Commission of Missouri during the war would necessitate a "speed-up" in laboratory testing methods, Jones, Hetzler and Sloan set out to devise a method which would speed up the testing of single-phase watt-hour meters from 80 to 300 meters a day. In their efforts they had the support and encouragement of their superintendent H. A. Howery.

Net result of a year's experimenting and perfecting the idea resulted in a semi-automatic turret-top test rack which rotates so that an assistant can keep a continuous stream of meters in position for the tester. He can then devote his entire time to checking and adjustments. Used in combination with a photoelectric eye, which increases accuracy and relieves eye strain, the rotary rack enables the average tester with an assistant, to check an average of 200 meters a day, compared to a pre-war average of 26 per man.

The new rack was built of war surplus materials and designed in the Company laboratories. It was given a preliminary inspection by some of the members of the meter committee of the Missouri Valley Electric Association meeting in Kansas City in April. Patent rights are pending, but no estimates are as yet available on the manufacturing cost. Other utilities have indicated their interest in the new design.

Although they prefer to talk in terms of increased output in man hours, the designers agree that the new method will meet increased production requirements without enlarging the present working force.

Marketing — The Next Big Job

By Don G. Mitchell
President, Sylvania Electric Products, Inc.

An address before the Fifteenth Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 4, 1947

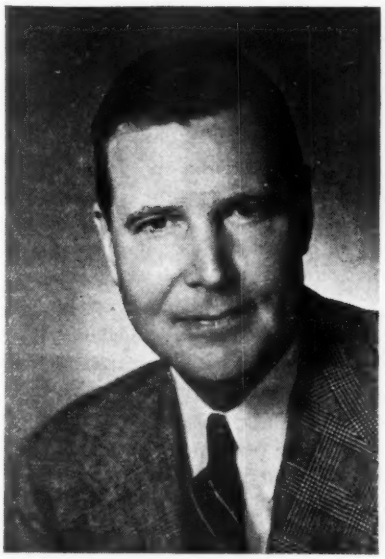
ANOTHER golden era, the decade of the Fifties, is ahead of us. There will be more people working to produce more goods which will bring a higher standard of living to the people of this country. All that is predicated, however, according to the 20th Century Fund, which has just completed an 875-page study on *America's Needs and Resources,* on the ability of the American worker to produce more.

Increased Selling

That makes sense to me because if labor will try earnestly to produce more per hour, costs will come down proportionately and wages will have a higher purchasing power. However, what the 20th Century Fund didn't tell us—at least not in any of the several resumes that I saw—was how we are going to dispose of this increased output. Of one thing you may be certain—it isn't going to sell itself.

You make electricity and I make lighting equipment, but we both know that we make no money just by manufacturing things. It's only when we sell them that we get anywhere. If that weren't so, every manufacturer would have been busy during the Thirties building up inventories and there would have been no unemployment and power companies would have had no idle capacity and there would have been no need for leaf raking and deficit financing—in fact, if I am not careful, I am liable to prove that there would have been no depression if only we had all kept on producing. But factories were not producing and your load was way down because the country was not selling enough to keep the wheels in motion.

Back in the days when people would walk a mile into the woods to buy a good mouse trap, very few people worked in factories and when they did there was no mass production. Today you may walk a mile to get a Camel but only after the manufacturers of that brand of cigarette have spent millions of dollars in every kind of sales persuasion to get your business—and even then I suspect that if you could bum some other brand closer at hand you'd do it.



MR. MITCHELL

Take your own business as an example. You have a product that has unquestioned quality, is instantly available —you don't have to walk a mile to push a switch—and at a price that is low and getting lower, yet where would your load curve be if you left it to the public to "come and get it?"

Of course, if an essential product or service is in short supply, the customers will do almost anything to get what they need. What I am talking about, however, is a situation where we have enough for everybody and more. Improved productivity will contribute to lower prices but to move goods, you will still have to *sell* and the more everybody makes the greater will be the sales task.

I am not taking issue with the statement that improved productivity is a major problem in the future economy of this nation. Every manufacturer is bending every effort to find a way to pay the higher wages that labor is demanding without going broke. Higher prices may be necessary at the moment, but they aren't the answer in the long run. We must find a way to keep prices from advancing—in fact, to lower them. Obviously, then we must lower the cost of labor, not wages, but the labor content of each unit that comes off our lines. Higher productivity per labor hour therefore is essential, but at the same time let us not forget that the increased production, at full employment as well, will result only if it is sold to someone at a profit.

The New Market

Consequently, in my opinion our biggest challenge in the Fifties is not productivity, but marketing. I believe that labor will be cooperative, but even if I am wrong I know that mechanization has a long way to go before it can no longer contribute to greater efficiencies. On the other hand, to bring to market profitably a vastly greater production than ever before is not a problem that can be solved by the old rules. For the job ahead we need new visions, new imaginations, new daring, new methods, and—if those now in the sales jobs do not measure up to the larger task, we shall need new men.

For the past two years, people have been begging for goods but as production increased, product by product, the picture began to change from an insistent demand to a buyer's strike or some other form of buyer reluctance. Today we are in a recession. Already prices have begun to break and buying resistance to current prices has stiffened to such an extent that even in some lines where the need is great, such as housing, sales have suffered tremendously. There is no question in my mind but that some prices went too far and that a correction was necessary. Since markets swing like pendulums, we can expect the correction to go below the stabilization point before buyer confidence is restored. But because most prices did not get far out of line I do not believe this readjustment period need be prolonged or too severe.

There is still a backlog of desire, still the stimulus to come from newly designed products, and still the impact that

good hard-hitting selling will bring. The market hasn't dried up as it did in the Thirties. People have merely changed from eager buyers at any price to cautious purchasers who will be won only by worthwhile values and intelligent marketing. I can't believe we are in for anything more than a corrective recession at this time.

Moreover, such a period may have some advantages because it will serve to weed out those unfit or ill-equipped for the strenuous marketing job of the next decade. It will enable industry generally to catch up and be ready for the next round in addition to affording the time for long deferred maintenance. It will provide the time to organize sales programs and get them under way. By the time the corrective period is over, industry should be in a better position to go forward in a big way than it is today.

For that reason, I had no hesitancy in coming before you today to discuss marketing as the next big job. There is not a manufacturer in this room who has not known what it is to dread the morning mail for fear it might contain an order. But also I imagine there is more than one who has experienced frantic wires for shipments one week and cancellations the next. Your business may differ from ours in many ways, but living in the same economic atmosphere you cannot stay oversold while your customers reduce production. The change may not come as swiftly to you as to some industries but eventually you too will find that you have idle capacity. In fact, your problem may be a little more difficult than ours because you have so much additional generating capacity on order.

Now Is the Time

No matter what your immediate situation may be, now is the time to encourage your commercial departments to get going, particularly in those markets where for the past 5 years you have had little or nothing to sell. It takes time to build up sales momentum. Already it may be later than you think.

Primarily, however, as manufacturers we are concerned less with what you sell today than with your commercial plans for the decade of the Fifties. During that period, we must keep our people employed and our factories busy. How much can we depend on you to provide a market? What are your plans? Will they be based on your previous growth figures or something much more stimulating? Frankly, your pre-war record of load building is not going to be sufficient to take care of the ability of the electrical manufacturers to produce. If we are to do our part in strengthening the economy of this country, we shall need plans for expanding the use of electricity far beyond anything we have seen so far.

Please don't misunderstand me. We are not asking you to do our selling for us. We'll sell and we'll sell as we never sold before. At the same time, we know and I am sure that you do also, that we can produce our best results in areas where the market has been prepared. That is your responsibility. You prepare the soil and I can assure you that the manufacturers will help you in every way to bring home a bumper crop—but don't skimp on the fertilizer.

Utility Market Responsibilities

When I said you had the responsibility for preparing the market, I wasn't trying to pass the buck. Leaving aside for the moment the community of interest between the electrical manufacturer and the utilities, there is a public relations problem which will never be solved so long as the people of any substantial part of the United States are economically poorer in terms of electrical advantages than the people in some more progressive section.

Let us also face the fact that some sections of this country far outstrip others in usage and the sections that are in the lead are seldom those that have a high average income. You know the answers to that one better than I do, but from where I stand it seems as though the gaps could be closed with a generous application of hard sales work sparked by vision and a policy between utility services that is competitive and not protective.

It was just a year ago this month that France nationalized her gas and electric utilities, and by this time next year England may have followed suit. The United States will then be the only large country in the whole world where electric service is supplied very largely by private capital. Will it last? I think it will if you gentlemen are never satisfied with your progress but are constantly striving to enlarge and extend the benefits of electric service.

In both France and England one of the reasons given for nationalization was the necessity for developing electricity usage far beyond anything that private investment had apparently been able to do. In spite of the fact that our consumption per capita is so far ahead of both those countries, and most all the rest of the world, we have, as you well know, some of that same color of thinking in this country. There is only one way to keep it under control and that is by making bigger plans and leaving no room for criticism to gain support.

You can't let down. The moment you do the door is opened for transfer of ownership. There can no longer be any room in this country for self-satisfaction on the part of any industry and particularly the utilities. We are in a struggle with mighty social forces in which no quarter will be given by the other side.

For that reason, those of us who wish to preserve free enterprise must work together with a strong sense of interdependence. You are not alone. Most electrical manufacturers grew up and prospered with the light and power companies. We want to continue to work with you. We will do everything in our power to help you to expand the use of electric service provided only that you have the vision and the courage to make bold plans for growth.

You have no right to expect us to wait for the business that comes from extension of electric service unless you are willing to put as much or more sincere effort as others into intensive and extensive market development. What I am trying to say is that the market for electricity does not belong to you alone. I am sure you appreciate the community of interest there is in that market—what it means to the electrical manufacturer, contractor, dealer and wholesaler.

Interdependence in the Electrical Industries

We are all in this business together but you are the captains of the local industry. The sales pace you set is bound to characterize the whole tempo of the market of your area. On the character of your commercial promotion depends the economic progress of the other branches of the electrical industry. We have always been interdependent but never as much as we will have to be in the decade ahead.

In the mass marketing job to be done, I expect industry to be arrayed against industry more than ever before in the mighty struggle for a share of the consumer's dollar. Neither the utilities, nor the manufacturers, nor any other electrical group can hope to get their full share by working alone. Together, however,

we can all win, provided there is the right kind of grass-roots leadership. As you contribute to the welfare of the industry through well-planned aggressive promotion of the use of your service, so will the rest of the industry contribute to your welfare through greater sales of energy-using devices and equipment.

The measure of attractiveness of your area as a market will be the size of the objectives you set and the degree to which you will provide the means to reach those goals. The higher you set those goals and provide the necessary money and manpower, the quicker will you have success because the rest of us will imbibe of your enthusiasm and demand bigger and better goals to conquer. On the other hand, if you set them low and comfortable-like, don't be surprised if you have to do most of the work alone because the manufacturers will naturally give the greatest assistance to the most attractive areas.

Those of us who have been close to the utility business realize how enervating regulation can be. You cannot have the same incentive that competitive business has because the moment you make more than the law allows you have to give the excess back to your customers and even that permissible return is being whittled down all the time. Also, you are under the handicap of being the sole supplier of electric service in your territory—you have no competitor on the other side of the street to keep you aggressive.

Competition from Within

No business, however, is ever free from actual or potential competition. It is unfortunate, but, nevertheless, true that it sometimes takes competition to put a business back on its toes. The railroads, for instance, became progressive and began to sell transportation in an aggressive modern fashion when automotive competition made it necessary.

You, too, will have to contend with competition from other services some of which have already put in their appearance. Your greatest competition to the growth of electric service, however, is not from without but from within. Other investments continue to be a deterrent to strong promotion of electric service, but more insidious is the sales inertia that comes from insufficient incentive. The pace of marketing in the next decade is going to be too fast for any company or individual who is inertia bound.

Strangely enough, however, you have done most of the things that generally result from strong competition. You are everlastingly improving the quality of your service while at the same time you are reducing the cost to the consumer. I know of nothing else of which you can get as much or as little as you want, and of the finest quality, without waiting. I know of nothing else that has continued to come down in price as consistently. If disaster overtakes you in the way of fire or storm, there is no limit to which you will not go to restore service to your customers promptly. Outside of rate reductions, nobody orders you to do these things. There must be some incentive and I suspect that much of it can be traced back to the inherent pride of performance of the engineering fathers of this great industry. It's time now to take the next step in competitive operations and give to the commercial departments the same degree of encouragement for top-notch performance that you have given the operators and engineers. In fact, the smart executives of the next decade will be those who recognize the importance of the marketing problem and who look to sales for leadership.

Tomorrow the Salesman

In the beginning it was the engineer who ran the business because the dominant problem was one of building facilities. When it became necessary to consolidate and create systems, financing was all important and you turned to the bankers for guidance. After legislative matters became paramount, lawyers rose to prominence. Your next big problem, and one that will be with you as long as we have free enterprise, will be marketing. Tomorrow is the day of the sales executive!

Earlier I spoke of one incentive to foster growth, namely, the desire to live. There are others that should help you in the determination to build load faster than ever before. Good public relations cannot be kept healthy, in my opinion, in any atmosphere but one where the people are conscious that you are doing something for them and the community. You can't help creating an awareness of the value of your service when you intensively sell more.

Good employee relations stem, in part, at least, from the enthusiasm that abounds in a progressive and fast growing company. Growth creates opportunity—opportunity for promotion. It also will attract young men of ambition.

You have good cause to be proud of your record of rate reductions. These may be coming to an end but you do not necessarily have to stop reducing the cost to the consumer. By selling more, it may be possible to continue for some time to show that the average price of electricity is going down.

Above all others, however, is one that should be in your mind at all times and that is the necessity for keeping America the best place in the world to live in—the free America that we know—the land of opportunity.

To do the big job ahead of us is going to require a new philosophy of marketing. This is a different concept from that of mere selling. Ahead of us is a new marketing era in which the volume of goods and services to be sold is so large that our former peacetime sales plans, budgets, methods and manpower will be inadequate. Tomorrow's market demands men with great vision to set goals and marketing ability sufficient to win these objectives.

Sales managers who are satisfied with the pace of the past and make no extra effort have no place in the program I am talking about. Because of the apparent lack of incentive, there has been too much inertia in too many utility sales departments. Men who cannot supply their own incentive have no place on tomorrow's team. It will be the responsibility of top management to replace them with men whose reach is farther than their grasp.

At the same time, don't criticize the sales manager unless you are willing to give him the tools that are needed to do the job properly. He can have no vision, set no goals and make no plans that are bigger than the money and manpower that are at his disposal.

How Little or How Much

While I would be the last to advocate handing out money recklessly to any department, I am confident that there is great inefficiency in penurious budgeting for marketing purposes. To approach a market on the basis of how-little rather than how-much-we-can-afford-to-spend simply means paring of budgets and plans and hiring less expensive people and fewer of them. Liberal budgets with wise management will, as a rule, produce a larger volume of sales and faster than a program of economy, and in the long run be more beneficial to the investor.

In your operations, as in ours, there are some kinds of business that carry a

long profit and some a very narrow one. Obviously you cannot afford to spend as much to get the latter as the former. How much can you spend to get the high return business?

Budgets set on that basis will give the new business department the incentive to get more of that class of business. On that basis you will attract more manufacturers and dealers to help you get the business and in the end your volume will be much greater than it would be by your own unaided efforts.

A liberal budget will also permit you to hire more and better sales people. With more money, you can discard the policy of how-little-can-salesmen-be-had-for in favor of how-much-compensation-is-possible. Out in competitive business where every penny counts, it has been proven over and over again that salesmen who are well paid are far less expensive in the long run than those who are willing to work for a small income. The good salesman sells so much more that his unit costs are lower and the revenue to the company is proportionately higher. I'd rather have one $5,000 salesman than two $2,500 men any day. I know that at the end of the year my company would have more business and better satisfied customers.

Liberal Compensation Plans

Good men, however, can be kept only if your compensation plan has been designed as an incentive not only to keep the men hustling but happy in their work. Unnecessary turnover in salesmen is expensive in training costs, lost business and low morale.

Everywhere I look I see a definite trend toward scientific management in marketing. Progressive companies are making every effort to determine ahead of time the proper procedure so that there may be a minimum of costly mistakes and so that management can plan investment programs with reasonable assurance that they are not gambling. Salesmen, for instance, are more and more being selected for their aptitude and fitness instead of just being hired because they look bright. With careful training and proper compensation, these men stick and do a job.

Marketing requires a knowledge of markets—which means a careful analysis of market potentials in considerable detail and a knowledge of consumer preferences and buying habits. Even then it is desirable to have pilot runs before releasing big costly programs—a little slower perhaps in the beginning but with less loss of time and money in the long run. In fact, scientific marketing requires controls all along the line. In this way, not only do liberal budgets become low in cost but objectives are assured in advance.

In fact, selective selling which is designed to bring the best return on investment is effective only when investigation and analysis have produced reliable information on which decisions may be based. Too often in the past we have approached markets armed only with assumptions arrived at by guess. To be successful under such conditions is more a matter of good luck than good management.

One of the more effective tools in tomorrow's marketing is bound to be cooperative effort. If everybody is working in the same direction with the same objectives, it is natural to expect much more to be accomplished. That is why we look for such great things from the Planned Lighting Program. Instead of the several lamp manufacturers competing for your attention, each with a different program, how much more reasonable is it for you to work out a single program of your own which all of us can accept and work for.

Like any other cooperative endeavor, the individual underwriters must submerge to some degree their individuality and this is done in the belief that the end result will be greater than it would be through each going his own way. It is our joint responsibility to see that it works out this way.

In closing, let me emphasize once more that we are placing the economic welfare of our employees, our companies, our industry and our country in the hands of those entrusted with marketing. They must be right and their tools must be adequate. In every way they must be encouraged to achieve goals way beyond anything in the past. Be generous with money, manpower and facilities — everything but time. There can be no leisurely approach to this task.

If these things are done, I can assure you that the manufacturers, their wholesalers and their dealers, recognizing the degree to which they are tied to your progress, will follow your banner with enthusiasm.

Accounting Division Meeting

THE open meeting of the Accounting Division General Committee on June 2 at the Annual Convention in Atlantic City, N. J., was attended by about 100 persons, of whom 21 were committee members. Four topics for discussion were on the program. Mr. B. S. Rodey, Jr., Consolidated Edison Company of New York, presented the first one—"Significance of Proposal to Revise Reports to Regulatory Commissions to Show Depreciation Reserve as a Deduction From Utility Plant." This proposal by the Committee on Accounts and Statistics of the National Association of Railroad and Utilities Commissioners has received a great deal of attention from the industry since it was first advanced by the committee in August, 1946. It is opposed with practical unanimity by industry accountants and executives and no one spoke in its defense at the June meeting. Mr. Rodey briefly reviewed the status of the proposal, pointing out that it was scheduled to be recommended in a report of the NARUC Committee to the national convention of its association which will be held in Boston during the week of July 14. However, he quoted from a draft of the committee's report as follows:

". . . . the Committee has prepared alternative pages for the balance sheet on which the reserves are shown on the liability side. These alternative pages may be adopted by any commission which is not yet ready to make the change recommended by this committee."

"Obviously," said Mr. Rodey, "the committee thinks that if many state commissions do not adopt the proposal and continue to use the present form of balance sheet, they will ultimately fall into line and the committee, if its recommendations are approved by the convention, will thus 'kill one bird with two stones.'" Mr. Rodey restated the arguments against the "net plant" form of balance sheet, and found no one to disagree with him. He emphasized that the sole argument in its favor that has been advanced by the NARUC Committee is that such a form of financial statement is "orthodox," "modern" accounting, and to this argument he replied that it is "orthodox," i.e., in common use by unregulated industry, only because the concept of "net plant" has no significance except to industries whose

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Let's Tell America

By Robert S. Peare
Vice President, General Electric Company

An address before the Fifteenth Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 4, 1947, presented in Mr. Peare's absence by Chester H. Lang, Vice President, General Electric Company

THIS is one of the most difficult spots, in point of time, at which it has suddenly become my turn at bat, and I think it is only fair to tell you that before I begin. In the first place, the cards are stacked. Every one in this audience is already in agreement with the noble exhortation which has been assigned to me for discussion—"Let's Tell America!" We have never been, as individuals, or as an industry, or even as a nation, particularly reticent in the past. We have not customarily withheld from our fellow Americans our advice, either on public policy or private shortcomings. In brief, we have not ever been reluctant to "tell America."

Thou Hast Eyes

As to whether we have been understood—that is a vastly different matter. Perhaps you saw in the *New Yorker* last month Peter Arno's cartoon of the overenthusiastic clergyman at the baseball game. Surrounded by shouting, derisive, and obviously Brooklyn rooters, and carried away for the moment by some diabolical piece of umpiring, the good padre has risen from his bleacher seat and is shouting: "Thou hast eyes to see, and see not!"

Now, as any advertising man would have told him, he undoubtedly was using mass media, his position was good, but his copy-angle was all wrong. Just so, in this business of selling electrical service, or free enterprise, or the American scheme to the public, our enthusiasm, our firepower, and our vantage-point have often been good, but our effectiveness has been nothing to write home about. I want to talk about that later.

Those who did read their advance program, who read as far as me, who read beneath the title "Let's Tell America" the words which say that Mr. Peare will discuss "our responsibility for telling the public about our business and the facts of life in a free enterprise system" they, I suspect, have already left this hall. I wish right now that I could join them and will understand if any of you do so.

MR. PEARE

because I don't pretend to know how to carry out such an assignment, on such a scale. I am a little weary this week of telling America. My back aches from that classically damned task of selling the American public the American way of life. My head aches from (among other things) wondering just what each of us *should* do to bolster free enterprise. And, here we go again.

Initially, it seems to me, if we are to come to grips with a subject like this we've got to find a few good solid handholds. The program for the last two days has offered many such handholds (for a good public relations structure is not the smooth marble edifice that some people seem to think it is) and admirable advantage has been taken of them: the engrossing and extremely objective teaming of labor and management as outlined yesterday by Mr. Chaplin; Claude Robinson's practical discoveries and shrewd remedies in the area of public opinion; the craftsmanship of Ed Dunning and his associates in carrying the day-by-day story of this business to the public. These are tangible, measurable tasks, to do and to describe. In fact they are the elements that document and give body to the story I am supposed to tell.

When you are in the word-business—and I am—the hours just before dawn, or maybe the hours at the end of the day, can become a little frightening. The stuff out of which we word-plumbers must justify our existence on a payroll and perhaps even more important justify our individual existence in the play is a tenuous and illusory substance—these words and phrases, this paper and ink, the ill-assorted harvest of sound from a loudspeaker. We spend our days shooting arrows into the air and wondering where they may come to rest; whether, by the grace of God, they may have chinked the heart, the mind, or even the precious consciousness of another human being.

Words and Men

Most of the time we never know—*really* know—and that is what makes the job harrowing. So elusive a target is the human mind that we are not aware that we have drawn blood, or that our arrows have simply clattered onto barren ground, until a Claude Robinson or a Henry Link or a George Gallup stop people on the street, at their jobs and in their homes, and ask them questions. In this rather devious way—devious for us but deadly in its results—we may get our answer. Or we may get our answer even more directly and expensively and painfully from a strike, a depression, an election, or a war. If the scientific measurement of public opinion has taught us anything, it is: how little we know our strength, how vastly we underestimate our weakness. Words and the men who use them are more important today than ever before in human history. We have the high responsibility to use them to evoke understanding and belief.

And so we come back to such words as "the American way of life" and "free enterprise," phrases which once sounded brave and meaningful but which through

too much handling have lost their very texture and substance, just as that fine old word "democracy" has been devalued and misshapen in the mouths of men who have never known its meaning through personal experience.

You and I have known what the American way of life is, because we have been making and selling it in the electrical industry for a long time. You and I, in this business, know well what free enterprise is, some of us by proxy and inheritance and some by actual experience. We have in our own lifetimes touched the devices, rubbed shoulders with the pioneers, and been paid the very real dividends of one of the greatest industrial adventures of all time. We have not learned about private enterprise from books, from teachers, from advertisements, from public speakers. We know it from our own experience, and we have no difficulty in identifying that experience as genuine. Because of this circumstance we are fortunate; and because of this circumstance we have an obligation, to somehow, in some way, transmit our experience and our conviction to the millions who are skeptical, bitter, indifferent, ignorant, careless—and dangerous. The innocent today are the most dangerous of all.

Now, what are we going to tell America, and how are we going to tell it?

1. Are we going to tell America that American industry is the greatest material force in the world—and then find ourselves faced with charges of too much power and renewed demands for more control and regulation?
2. Are we going to say that American industry has provided the highest standard of living the world has ever known and spread it over 140,000,000 people—only to discover that they don't believe us because they have no basis of comparison?
3. Are we going to tell America that the drive to destroy the profits of American industry is for the purpose of insuring that our industrial machine can never be rebuilt to the point where it can adequately serve the American peope in war or peace—and point out that this is happening at a time when Russian economists are predicting the downfall of our economy because there isn't enough profit in it?
4. Are we going to tell them, and prove it, that American industry is too smart to destroy its market, its communities, its country, by intentionally weakening the buying power of its workmen and customers—point out that American industry had to invent the American wage scale before it could invent the American industrial system and standard of living, and not vice versa?
5. Are we going to show them that the difference between investment of tax moneys and investments by private capital is that in tax money the control passes, except indirectly, out of the hands of the person who has provided the money—and that this control is the goal of the tax spenders?
6. Are we going to tell America that American industry has a promise and a plan for everyone of them, and show them what it is—or are we going to leave them to listen to the siren song of other plans and planners?

These are some of the alternatives facing us today.

Business Strikes Back—Locally

But I'm not particularly concerned here with what you tell America. You each have different stories to tell, and you know those stories better than I do.

I want to discuss a little what strikes me as one of the real tactical traps that lie ahead of us in the job of telling America. An interesting thing has happened to business. Aware of its shortcomings and of the inequities and mistakes that accrued naturally during the vital decades of its physical growth, it has subjected itself since the war—even before that—to a critical analysis. I honestly believe that industry has searched its soul and come up with some new answers in the way of planning, hedges against insecurity, and consideration for its position of trusteeship in respect to its employees, its stockholders, and its customers. When it was relieved of its bonds of war production, it blithely set out to redistribute industrial justice. Then it was slapped down hard, and the shock lasted just about a year. To put it bluntly, business suddenly found out that it couldn't increase its benefits to people without first obtaining permission to do so because that would be an attempt to acquire merit, build character with people—an act now declared to be an unfair practice.

You might say that we in business have now arrived at a point where we know what we want to accomplish, but today we are fumbling a lot with methods, and right here is where we may go astray, here is the trap. It was a great step forward when we realized that we had something to sell besides the refrigerator, the turbine, and the kilowatthour. We grew up another notch on the scale of industrial statesmanship when we realized that we had to sell business morals and business motives to the American people. But our mistake, in my judgment, lies in thinking that this is a job to be done only on a grand scale with mass methods. That is the method which has been adopted by the National Association of Manufacturers. With all due respect for their good intentions and their zeal, I don't think it will work.

You cannot spell business with a capital B and try to cram its virtues down the throats of faceless masses of people and still maintain your amateur standing. For one thing you become a propagandist for a crusade, and that is bad. For another thing, you immediately present a large, slow-moving target for the poisoned shafts of your detractors, and they are many. To further confuse an already mixed metaphor, you become a convenient shelf upon which any public servant with a package too hot to handle hastens to deposit his bundle. You are all defense and no offense. You aren't the corner grocery, or the town lumberyard, or the Ford Motor Company, or the Third National Bank—none of those things that people can reach out and touch. You are Business, a suspicious character, not to be trusted in the same room with the children, a citadel of old abuses, and a conspirator against the common man.

There is an old story about two friends who were talking when a third man walked by. One of the friends said, "I don't like that man." The other said, "How well do you know him?" "Why, I don't know him at all. I've never met him. And I don't want to meet him. If I knew him I'd probably like him."

Familiarity Breeds Good Public Relations

Our problem is actually one of technique. Our objective is to be believed. And what is easier to believe and understand than something familiar, something close by. This is a concept of business with a small "b." It is a concept so easy

to work with, so right, that we almost miss seeing it at all. Business *is* the corner grocery; it *is* the lumberyard; it *is* the Ford Motor Company and the Third National Bank. It most definitely is the local electric service company. The people of this country will never know Business with a big B, and they'll never like Business with a big B. But they can know you and if they do I know they'll like you. I don't think we can win important converts to our way of thinking, to trust us and support us and—most important—identify themselves with us, so long as we confine our efforts at persuasion to mass methods through mass media to the masses. I want to urge as strongly as I can the addition of a few less imposing but more realistic activities on a community level. Some backyard conferences in your home town where you slip over to the neighbors after work and let him get to know you.

Go to the Schoolroom

For instance, there are kids in your operating neighborhoods who have come to maturity without the slightest conception of the proved desirability, the proved achievement, or the proved indispensability of what we have been calling private enterprise. What they think about business and profits would make your hair stand on end. What have we done about it? Not very much. Business is the economic machinery of living. It not only has a right to be ably taught and ably represented in the public schools, but every student has the right to have it explained to him and to understand it. If you are as aggressive about this as you are in promoting new commercial or domestic load, you will begin to see that you get that kind of representation in your community. I'm not talking about propaganda at all. A light and power company just happens to be one of the most interesting enterprises in any community. Its wonderful equipment, its role of universal servant to homes and businesses all over town make it Exhibit A in any progressive school room. If the kids in your community don't know how electricity is produced, distributed, and controlled; what kind of jobs it is called upon to do locally; how its selling price is arrived at and why that is a fair price, then you have a job cut out for you that is just as important as anything you may be doing. We should not be ashamed to visit the schoolroom, and we should not be frightened away from it. Business concerns everybody because it belongs to everybody.

We could sit down in these communities and figure out how to help teachers in their job, and incidentally we could give some active support to the teacher's personal problems. Is there anything wrong about men and women in business understanding the problems of teachers and trying to help with their solution? A great many things must reach children through the mind and tongue of the teacher, and yet at the present time it would be hard to find a worker in our national scene who has been more completely blocked off from the philosophy of business, from the rewards of competition and initiative, whose compensation is so inadequate and so much dependent upon the whim or necessity of an ironclad system, than is the teacher. Incidentally, the teacher and the policeman and the fireman are pretty good examples of what happens when a group attains security. They lost something else when they got it. There is not a single logical, economic reason why a public school teacher should be anything *except* apathetic toward free enterprise, and yet we somehow hope that she is passing that story along to our children. Let's help her and help business, and help America.

The Corporate Citizen

What to do in the communities where we exist as citizens is plain, no matter what commercial or corporate form we may take. I remember that in the General Electric Company, during the time of our strike a little over a year ago, we were far more shocked by the seeming disloyalty and misunderstanding evidenced by the butcher and baker, the lawyer and insurance man, the common council and the clergy, than by anything our employees said or did. We decided it was because we had been taking that community for granted, and we decided that we were going to do something constructive about it from then on. Today, when we advertise in a local paper in a plant city, we take a special look at the circumstances and the copy, and we try to speak not just as a salesman of goods, or an employer of labor, but as a fellow citizen who values his character and his neighbors and cherishes his privilege of citizenship. We are trying to approach that community and sit on its front porch through the effortless efforts of our own employees, who will be informed employees, and who can speak with authority to the man next door about what the General Electric Company—*their* company—is going to do. We are aggressively trying to do many things, none of them new and none of them startling, but all of them conscious efforts. We are inviting conversation, rather than broadcasting. And we listen to what that community is telling us.

This is more difficult for a manufacturing corporation like ourselves to do than it should be for an electric service company, which is as local as the post office, as intimate as a meter reader, and which in the way it affects people's lives and influences their mode of living comes about as close to being the nerve center of a community as anything I can imagine.

As One Man to Another

It is increasingly clear to me that all of us must speak for business as we know it, as one man to another, and not as a stilted spokesman before a microphone. Today it is not what we on the management side of our businesses think which is important, but what other people think about us, what they believe, and what they do as a result of that belief.

During the war people stood in open-mouthed wonder at the enormous jobs that were undertaken by industry. While they were asking "How in the world will you ever do them?", smart engineers and production men were breaking them down into components and parcelling them out to units that could handle them. And traditional manufacturing operations were being likewise broken down, again and then again, into jobs simple enough so that new employees with no previous manufacturing experience could do them with ease.

This same method is traditional in the block system in politics and the cell system of what is euphemistically called the communist party.

What I am suggesting to you in these general terms is not a campaign, but a new approach. I don't think there is any time limit on it, or any budget, or any particular media prescription. None of your activities, from a merchandising advertisement to a service call or a telephone inquiry is outside its scope. It must be aggressive and repetitive and consistent. It is not just a job for an advertising manager, and an agency alone, but a missionary job for every man and woman who is umbilically joined to your business.

And this reminds me of a true story that the late Freeman Barnes, of General

Electric's lamp department, was fond of telling. All across the country he had been putting on a campaign, an extremely simple campaign, which consisted for the most part of one sentence, drummed into the heads of appliance and hardware retailers who were also lamp dealers. When a customer came in for a toaster, or a box of tacks, or something, the dealer would wait on him as usual and wind up by saying, "How are you fixed for lamps" Of course, he should have said it anyway. This particular effort went on for a month or two and lamp sales increased tremendously. Discussing the success of the campaign with Barnes afterwards, one of our better lamp salesmen said: "That was sure a fine campaign. I think we should put it on again sometime."

Doing what ought to come natural shouldn't have to be a campaign, of course. It should be a habit. It is only that we have fallen into the habit of packaging our relations with other people, and labeling these packages neatly as "sales," "collections," "advertising," "campaigns," and so on, assigning them to competent personnel or departments, and then forgetting about them. You are probably at least on speaking terms with the various devices that we in advertising use to convince ourselves that we are doing a fine job, or at least that we are on the right track. We have various methods of measuring—we measure the number of persons who buy a certain newspaper, we measure the number of people in a family who read a certain magazine, we measure the progress of their eye from top to bottom of a page, and at the drop of a hat we can tell you the advantages that a left-hand position has over a right, or vice versa, depending on where your ad happens to be located.

Selling Intangibles

There is just one rather important thing that we don't measure very well with these modern instruments and methods, and that is the temperature of the heart and the light in the eye. If it is a product we are selling, the real measurement will show up in the sales curve. But if it is an intangible, such as the morals of business, we are still shooting arrows in the air, and it doesn't matter how many millions of families we are buying with our advertising money if we aren't convincing any of them that we are normal, decent, God-fearing people just like themselves, that we don't beat our wives, that we keep our grass cut and our teeth brushed, and that we value their interest and their friendship.

What I am trying to say to you here, over and over but in various ways, is that it is not our own opinion of ourselves as managers, or corporations, which is important—but what other people think of us. If there ever was an industry that was made up of thousands of small businesses and small business men, or that was dependent for its progress upon the ingenuity, the reliability and the hard work of individual human beings, certainly it is the electrical industry in all of its phases. The company by which I am employed, and many others for that matter, are tremendous, corporate enterprises; they are big business in the sense that we know it. And yet the things they have to sell their fellow citizens have been made possible by the inventive genius of individuals, by the painstaking manufacturing skill and craftsmanship of individuals, by the thrift and wise investment of individuals.

Person-to-Person

And if there are consumer products, they are sold across the counters of thousands of small American business establishments. Therefore it behooves us, as manufacturers, when we set out to sell morals and aims and ideals and beliefs, to adopt the person-to-person methods of small business and get back so far as possible to advertising in its classic form, and that is when one man tells another. That is a job that, because of our very size, must start from within. Our own people must know what they are doing, why they are doing it, what relation their job has to some one else's job, and they must believe in it and feel that it is right. Then each one of them, in his own person, is the best advertisement that any company can have.

There are certain basic differences in the job as it applies to the electric service company, of course. If our taint, to use the language of the malcontents and the hate-breeders, is being big business, then your taint, as utilities, is being a monopoly. But the methods you can use to turn customers into friends and believers and well-wishers for the kind of business you represent are the ones we all can use. According to statistics and I don't like them, an excellent start would be to acquaint all of your people with their own importance in the operating scheme. I believe you can sell most of these employees in the utilities industry. They will project that importance and understanding in their dealings with others. You are in the somewhat fortunate position of having customers who are given no option but to buy your product—electric power—and most of your promotional energies can be devoted to making them happy about it.

On the product side your job is to build load; on the institutional side your job is to build understanding and trust —what Ash Collins calls the "love story of electric service." There is a reason for your position in the economy as a regulated monopoly, and that reason is founded in service, in lower prices, in the conservation of natural resources. This is an exciting business, with a thrilling history, and a destiny that pretty closely parallels the destiny of your country. It ought to mean more to your customers than a meter in the basement and a monthly bill. It means light for a thousand eyes today where yesterday there was only darkness. It means power to turn a thousand wheels and move ten thousand burdens which yesterday stood still or were moved by human hands and backs. It means safety and health and longer life. It means cleaner cities and happier homes and better transportation. It means safe investments, productive efficiency, lower prices, and shorter hours. It means all of these things, not for a handful of business barons or Wall Street bankers, but for every human being up and down Main Street in every small town in America.

Planned That Way

And perhaps, the most important item you have to sell in connection with all these things is the intent of the men who did the job. If I may borrow a phrase—*It was planned that way*—by the men sitting in this room and those who went before them. That, gentlemen, is what you have to tell America, not in the mass, but one family at a time. And when you really begin to do this job, we can throw away such meaningless phrases as "free enterprise" and "the American way of life," which are the kinds of sadly sweet expressions that we find on tombstones in the country churchyard. The things we do will stand for the things we are. Let the epitaphs decorate the resting place of those who deserved them because they could not find it in their hearts to trust America and the Americans who make the wheels go around.

The Public Attitude Today

By Dr. Claude Robinson
President, Opinion Research Corporation

An address before the Fifteenth Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 3, 1947

THE number one problem of this industry is nationalization. And that is also the number one problem of the whole world. How far shall the state go in organizing the economic and social affairs of the citizenry? Shall the state merely provide the legal matrix wherein citizens can conduct their work, or shall the state provide the organizing function down to its minutest detail?

In this worldwide struggle, you, as leaders of the electric power industry, have a very special responsibility. More voters in the United States agree to the nationalization of electric power than to the nationalization of any other industry. In a very real sense, therefore, you are the spearhead of the nationalization movement in this country.

In Russia, the state owns and operates practically all property. This process of socialization has been accompanied by unspeakable brutality, with swarms of secret police and some 15 million political prisoners in concentration camps.

Moving westward, the great thundercloud of nationalization now hovers menacingly over England, with the Labor Government taking over coal, transportation and credit, and reaching for steel and iron, and even the land. The English, who have traditionally loved liberty, think they can have individual freedom and nationalization too. But these two things are antithetical. They can't be mixed. If you have a national plan then you must coerce people who vary from the plan. You cannot have freedom of choice and Commissars of Industry in the same social system. One or the other must give way.

Moreover, the English are likely to demonstrate the hard sociological fact that organizational efficiency is related to the size of the organizational pyramid. So much human effort is expended in filling out forms in triplicate, clearing allocations and priorities, petitioning for authorization, and in general, practicing by the book, that inevitably less human effort will be available for mining coal, making shoes, and building houses.

DR. ROBINSON

In America the philosophy of capitalism is still strong, but even here nationalization movements have made great headway. In your own industry, for example. Also in the widespread acceptance of NRA as a means for solving an economic crisis, in the growth of government credit agencies, in the rise of labor monopolies, and in the attempt to organize medical practice under the auspices of the state. These are clear bench marks of the nationalization tide.

Some people argue that the trend toward nationalization is inexorable, and that we might as well fall in line. This is the sheerest nonsense.

The long-term trend in civilization has been toward freedom for the individual and higher standards of living. Nationalization comes big with promise, but is short on delivery. As Walter Lippman has pointed out so eloquently in his "The Good Society," modern collectivist trends, parading under the banners of liberalism, are in reality the darkest kind of reaction.

There is nothing inexorable about the social forms people accept. Social forms are things of the mind. If Americans come to believe they will be better off under a system of nationalization, then we will have a socialist state. On the other hand, if people believe we are better off under a system of competitive capitalism, and understand the basic mechanisms of this system, we need have no fear of a socialist state.

Since the nationalization of electric power has more popular support than any other nationalization movement, it becomes urgently necessary for electric power managements to visualize communication with their publics as one of their primary managerial jobs. To operate a privately owned electric power company today is a first-rate exercise in public psychology as well as engineering, finance, and business administration.

The electric industry has turned in a superb job of technical engineering. Rates have been trending downward and have been held low while other prices have soared.

The industry has put forth much effort to interpret itself to the public. Many local companies have extensive public relations activities.

You have a nation-wide advertising program and this program is in good and competent hands. In New Orleans recently we demonstrated that public understanding of rates and profits is increasingly trending upward. And recently, in our Public Opinion Index for Industry series, in a study of the public's attitude toward prices, we have gotten an excellent picture of the same thing. The public has a very accurate picture of the extent of the rise in the cost of food, clothing, and durable consumers' goods. It also knows that electric power rates have shown a relatively flat trend. You have been telling people this fact in your advertising.

But as an outside observer who has had the privilege of serving you individually and associationwise as research counsel, I am strongly of the belief that you have not done nearly all you can to lay your case before the public. I wish to say this, not in a spirit of criticism, but rather to say it constructively with a

view to seeking better solutions for what is admittedly an urgent public relations problem.

My feeling is that your selling efforts need to be strengthened on what we might call the merchandising side. When an economic product is being merchandised the first thing a manufacturer does is to set down the claims for his products, and theme these claims in terms of the public's interest.

Your product is electric power, generated by privately owned companies. Your long-term competition largely is electric power generated by publicly owned companies. You have a body of doctrine on the merits of your product against that of the competition. You have factual evidence based on experience. Not long ago the General Accounting Office gave you some interesting selling leads on the way some of the competitors keep their books! But for students, thought leaders and intelligent observers generally, this doctrine is hard to lay hold of. If your boy came home from school and said, "Oh Pop, where can I find a book that will explain the principles of private vs. public power?", what references would you give him?

What's the Answer?

Does it cost less to generate power in publicly owned plants or not? And how does that work out?

Is it a good thing for the community to take wealth by taxation and build power plants, or is this social function achieved with the expenditure of less energy when done by capitalistic methods?

Has the electric power industry always been pure and devoted to the public interest or have managers made errors in the past? What were these errors? And is public ownership the cure or is this prescription worse than the disease?

What is the faith by which you live? What is your claim to social preferment?

Are you really serving the public good or are you trying to protect a vested interest?

Where are the documents that display from the viewpoint of the social good, the truth about the electric power industry?

I do not believe, gentlemen, and neither do you, that private power can prevail in the United States unless it serves the public more efficiently at less social cost than public power. But somehow the conviction has been spread that the reverse is true, and that private power is a vested interest that seeks to delay progress in order that it can continue to levy its tithes on a long-suffering public.

The doors of scholarship need to be thrown wide open and the evidence on the social contributions of private vs. public power needs to be impartially reviewed.

Every successful social movement must have a sound philosophical core, a rationale, a blueprint or map by which men can find their way. If this can be supplied in a simple straightforward way that non-technical observers can understand, it can give a tremendous lift to your selling campaign.

Drawing again on the parallel of selling products, the typical manufacturer depends a great deal on face-to-face selling. He calls his salesmen together, shows them the product, reviews the sales literature, explains the campaign, gives the salesmen arguments, tells salesmen what to do when they meet a tough buyer, sets goals, and inspires his men to do their best.

Electric companies have thousands of employees. These employees are trained to be courteous, to handle complaints quickly, and otherwise be decent with the public. An electric company is turbines and transmission lines, and meters, but it is also people. Every company knows this.

But how many companies really train these representatives to spread the philosophy of private power? How many companies have written down on paper the faith by which they live? How many companies call their people together and give them a thorough grounding in the principles of private power? How many have employee manuals setting forth company doctrine? How many reward employees for making special effort to distribute the word?

Negative Employee Poll

We recently asked a national cross-section of the public if in the past year or so any employee of their electric company had talked with them, and, if so, what they had talked about.

Only three people in every 1000 replied that an employee had discussed company policies with them, and some of these said the employee had spoken unfavorably of these policies.

This is a very low rating. It shows clearly that the stream of private power ideas from electric power company employees to the public is a very small trickle indeed.

Moreover, the evidence indicates that a very sizeable proportion of your employees approve of TVA. In other words, managements of private power companies have not sold their *own* employees thoroughly on the advantages of their system of operation.

Advertising and merchandising go hand in hand. Your national advertising campaign must have more merchandising help at the local level, help for example from power company employees who can perform the function of local selling representatives.

This industry has long recognized the fact that while the tide of nationalization has struck it first, the same ideological forces, once having prevailed in the power industry, would attempt to nationalize other segments of our economy. You have argued rightly that other industries have common cause with you in resisting nationalization.

Index of Public Opinion

Management of American industry generally is making rapid strides in the definition of its public relations problem and is moving actively toward a solution. We know this through our researches in the Public Opinion Index for Industry. No doubt, most of you have seen its reports. I should like to indicate the purpose and method of this reportorial service. Electric power managements must become as expert in dealing with public psychology as they are in engineering or business administration. If management will study this phenomena of public opinion as it comes reported through the research opinion, we call it "The Public Opinion Index for Industry," a tremendously valuable tool will be placed in your hands to gain this managerial experience that is so necessary.

The Index prepares one report a month on one phase of public thinking that represents a problem for management. For example, when the Foremen's Union Problem came to the fore, we went out and talked with foremen about their attitude; we went out and talked with foremen about this problem, and we find the key to it is that foremen seek to idolize top management because they want to become top management. Hence, if top management loses the foremen through the "class struggle," it is largely through a failure in their own imagination to see how simply the problem can be solved through the identification of the foremen with top management.

This information is finding out what stockholders want to know about a company report. One of the very interesting

things that we see from these studies is that whereas a stockholder who has an economic interest in a company should be an assiduous reader of journals issued by the company, the fact is he reads stockholders' reports less than other things, or such things as the report about the pressures for the "annual wage," or the report about the desire on the part, or lack of desire—on the part of white collar workers to have a union.

When we first started the index, we only reported one statement, namely, "What does the public think about the problems that Management deals with?"

Then, as we went along, we saw this would become a much more powerful research instrument if we asked, "What do companies do about it, and what results do they get?"

In preparing these reports, scientific methods are used. Some 900 correspondents serve this index throughout the country. Whenever we want to find out how the public thinks, or Management works, we send a memorandum out to these correspondents, usually in the form of a questionnaire, so that everybody can be asked the same question. One thing we find about American public opinion is that people do like to express their views. They do like to be interviewed. When the material is collected from the field, it is gathered in Princeton and processed through the Holworth Method, which enables the handling of large masses of data efficiently.

Manufacturing Social Leadership

The Index visualizes all this problem essentially as a market problem, where a company really manufactures and distributes two kinds of products, the economic products, and the product we call "social leadership." You will notice that in each of these fields there is competition. For the economic product, competition is from other manufacturers, government plants, and cooperatives. In the field of social leadership, competition is from other companies, labor leaders, politicians, and reformers.

The classic formula for meeting competition in any field is first to make a better product than your competitor, and secondly, do a better job of selling than your competitors. This is true in the competition for the sale of ideas and ideologies, the same as it is in the selling of a product.

We know from our studies that Managements, generally are redrawing their original charters. Ordinarily, in the past, we found that a successful business was one that solved its production, sales, finance, research, engineering, and legal problems only. Now it is obvious Managements are redrawing this charter to add Public Relations for handling successfully public psychology in every branch of the business.

In our studies we have found out that last year 9 out of 10 companies with Public Relations Departments, say they are increasing their budgets this year, and 3 out of 10 companies with no Public Relations Department, say they are appropriating more money for their Public Relations Activities. Another indication is the growth of our own Public Opinion Index with industry.

Managements, generally, are seeking answers to this question in the same way as they go about seeking answers to other managerial problems. One of the characteristics of business men always has been, and always is, that business men face the facts once the facts are defined.

Stockholders' Opinions

We know that companies do have stockholders' approval for this kind of an effort. We have asked stockholders this somewhat tough question: "Suppose the head of a company made this statement: 'Today, no business can ignore politics. I am thinking of getting up an active campaign to tell the public the advantages of competitive enterprise. Also to point out the danger of certain governmental policies that are harmful to business. As a stockholder, would you approve of a company taking action along this line, or not?' "

Seventy-one per cent approved, twenty per cent disapproved and 9 per cent gave no opinion. An overwhelming majority of stockholders approve of activities along many lines such as worker education on the facts of business, teachers' tours to show how business operates, communications with stockholders on companies' problems, materials telling students of the benefit of the business system, advertisements explaining the free enterprise system and giving Congress and the Legislatures, the business point of view. We know the reasons for this approval is the feeling of the large majority of stockholders that in the past the policies of government have been harmful, not beneficial, to the interests of the companies that they own.

One or two points will indicate to you the general tenure of thinking of this kind and call your attention to some of the things that are being done.

About a year ago we went out and talked to employees about the profits that companies make. We find that employees have a fantastic misconception of the simple economic fact of what profits you make. Some people thought companies made 30 per cent profit in wartime, and 25 per cent profit in peacetime. They think a fair profit is about 10 per cent in peacetime. They don't make a distinction on sales as against moneys invested. The National City Bank, however, reported that manufacturers generally made 6 cents on net work and 3 cents on net sales.

False Notions

When we asked workers to divide the dollars that go to owner-bosses, many were not willing to guess, but those that did guess, guessed that 75 per cent went to owners and bosses and 25 per cent to the workers. Actually the pie is distributed 87 per cent to 13 per cent in favor of the worker.

Now, we might ask, "Does it make any difference about false notions of the company's profits?" It makes a great deal of difference because this misconception is the basis of much of the difficulty that business has public relationswise. It is basic in the conceptions that people use to support a union. "You make all this money and you won't give any to the workers, so we have to have a union to force you to give some to the workers."

It is basic in the idea, "To produce less and get more." It is basic in the unions' real wage demands. It is basic in government policy that you can advance wages and hold prices. It is basic in the conception that Management is greedy and without heart. It is also basic in your problem because people feel that they can get electric power cheaper through nationalization.

Many companies are doing things to make people aware of what they earn. A very effective device is used by the Illinois Bell Telephone Company. A man has a lucite tube with 104 silver dollars in it. When he punches the keys, out fall some dollars, and that is how much is paid out for material. He punches the key again, and out fall some more dollars, and that's how much you folks receive in wages. He punches the key again, and out fall some more dollars, and he says, "That is what we paid the stockholders for the use of their money," and so on. This device is a very important one, and I urge you to pay special attention to it because it is what we call a "carrier pie."

Many senses are captivated at once. People can remember the divisions of the dollars because they can see and hear the coins clink out.

There is another angle that comes out through this kind of research. When we ask people about a company, let us say, that made $18 millions profit after taxes, "Is that too much, or is that all right?" thirty-eight per cent said that was too much. Then we said to the people, "Here is another company that made 6 per cent profit after taxes on $310 millions of sales. Is that too much, or is that fair?" The percentage dropped automatically from 38 to 19 per cent, simply because one statement was in absolute dollars, and the other was stated relatively.

The "Informed" Public

We know from our studies that information and attitudes toward companies are related. Where the package is good, you will always find people more sympathetic, more understanding, more willing to support you where they have information. To test this, we divided people into the "informed group," "Yes, I do receive information about my company's profits," and the "uninformed," "No, I don't receive information about my company's profits."

Then we gave them a series of questions, and we found whereas 32 per cent of the informed say, "Management does reveal all important facts and progress reports to employees," only 13 per cent of the uninformed say that. Fifty-four per cent of the informed say that dividends paid to stockholders are about right, as against twenty-eight per cent of the uninformed. Fifty-one per cent of the informed are opposed to government regulations on business, as against 38 per cent of the uninformed, or, in other words, here is an example of a clear gain for information.

Go back to the question with which we started this discussion, namely, the collectivist ideology in America. We took up the problem and went out to see where this ideology is, and in whose minds it is, and how does it spread. In order to do this, we asked a series of questions, such as, "What is your feeling about government regulation of business? Would you say it is best to regulate business pretty closely, or would you say that the less regulation of business the better?"

Again, "Do you think it would be a good thing for the country if the government put a top limit on the salary any man could make?" If you answer the questions in one way, you believe in statism. If you answer the questions in another way, you probably are more sympathetic toward the processes of the competitive capitalistic system.

We asked ten basic questions, then we selected two panels in order to validate this method. One panel was of people whom we knew believed in government ownership of the various facilities of production, and the other panel consisted of college presidents, business men, economists, and others whom we personally knew believed in the philosophy of competitive capitalism.

We submitted this questionnaire to both groups and found that of the known collectivists, 81 per cent voted for collectivism, whereas 95 per cent of the free enterprise group voted just the exact opposite for free enterprise. We knew then that we had a sifting device which, if applied to the whole population, would tell us where the areas for the ideas of collectivism are, and those for competitive capitalism.

When we charted these groups we established what we called the ideological center line, where the collectivist control groups score about 81 on the left, and free enterprise control groups score about 95 on the right. Then we drew some interesting conclusions from the facts we had gathered from the people of these two groups.

Centers of individualism and self-help seem to be in the rural areas and small towns. The division of collectivism among the various voters finds Democrats generally tend to be more sympathetic to collectivism than Republicans. Business executives are far over on the right, editors are close to them, and small business men are close to the editors. The general public is the center line, and when we speak of right or left, we mean right or left of the general public.

The Catholic clergy are considerably to the right, and so are high school teachers and Protestant clergy, and federal employees.

The group that is furthest left is the union manual group, and manual workers.

In other words, this study demonstrates, that the distance is greater between the front office and the shop than between the front office and any other group, editors, clergy, farmers, professors, or what not.

And so we see that there is a lot of misunderstanding grown up between the front office and shop, and we know that the lines of communication must have broken down because the package, as we all believe, is much better than our ability to sell it.

Much of Management's thinking, therefore, must go into this problem of how to communicate better with employees, to tell them the simple economic facts of life.

Frederick W. Jesser

FREDERICK W. JESSER, who retired in 1940 as secretary of the Consolidated Edison Company of New York, Inc., died on May 28 at his home in Rye, N. Y., after two years of poor health. He was 74 years old.

For fifty-one years Mr. Jesser served Consolidated Edison and predecessor companies. He was born in New York and attended public schools. In 1889 he joined the Mount Morris Electric Light Company, which was an arc-light firm then lighting Manhattan west of Broadway, as a stenographer. The company had a hard time financially and Mr. Jesser used to make horse-and-buggy trips to obtain loans from stockholders and directors to tide it over till the end of the month, when the city, the main customer, paid its bill.

Mr. Jesser had risen to the post of assistant secretary of the Mount Morris firm when, in 1899, it was consolidated with the Edison Electric Illuminating Company. In 1924 he became secretary of the New York Edison Company and in 1938 soon after the merger of New York Edison and Consolidated Gas Company he became secretary of Consolidated Edison.

He was formerly secretary of the Yonkers Electric Light and Power Company and Green Mountain Lake Farms, convalescent home for Consolidated Edison employees, and has been assistant treasurer of the Electrical Testing Laboratories. He was a former president of the Edison Pioneers and served on its executive committee until his death. He was active in the New York Edison Employees Association, which he had helped to organize.

In 1939 he was guest of honor at a luncheon given in honor of his half-century with Consolidated Edison.

What to Do About It

By E. R. Dunning
Vice-President, N. W. Ayer & Son, Incorporated

An address before the Fifteenth Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 3, 1947

THIS is the Fifteenth Annual Convention of the EEI. Do you know that it wasn't until the Seventh Annual Convention back in 1939 that a man whose business it was to find out public attitudes got a chance to talk with you? That was Elmo Roper. Then in 1940, Colonel Robert S. Henry of the Association of American Railroads talked on the subject of the Fifth Column in private enterprise. Time rolls along and it wasn't until last year that you had a speaker the subject of whose talk got nearly back on the subject of human relations. That was Mr. Muir of the General Electric Company when he spoke on human wants and what we are going to do about them.

This year, the Convention slips badly. It not only invited Dr. Claude Robinson, an expert on surveys if there ever was one, but an advertising man to have a place on the program. What in the world do you think the industry is headed for?

That doesn't mean that there weren't men on the platform or in the audience who were unaware of the whole subject of Public Relations. But they were few in number against the converts of today. We are progressing. We are no longer thinking of the public as some abstraction which has no stake in our business save as a customer. That is we're doing it some of the time—our job is to do it more—better—all of the time.

Don't Wait For Trouble

I recently heard a Dr. Billings talk on the difficulty of getting people to church. Many men, he said, think of the church only when there is a death in the family. When that happens, they recognize the church as a mechanism useful in a certain troublesome situation. Similarly there are still too many electric light companies who think of surveys and public relations activity only when there is sickness in the business family and it is diagnosed as serious!

Dr. Robinson's talk outlined problems that confront us and because of his deep interest in our business he steals some of my stuff and tells what to do about it. I subscribe to his findings—my personal job is to help implement them.

MR. DUNNING

The Electric Light & Power business has many advantages over most businesses.

We deal in an essential to American life.

It's a cash business—we get paid nearly every day.

There is general desire for our product without the necessity for heavy brand promotion.

We have competition in many ways but not the kind of competition that the auto industry has or even the railroads.

(I can't help but interpolate here that such competition isn't all bad by any means. For one thing it insures more active market for above average quality manpower without which no company grows. I know I reflect the wishes of the younger executives in this audience when I mention that.)

Unlike most industries, our companies control the manufacturing, the production *and* retailing of electricty — and that's a big difference. And because of that, we accept certain obligations, with grace, I hope. Because we are manufacturer, distributor and retailer, we sometimes get mixed up as to which end of our business is most important.

That's not strange. Engineers, technicians, and scientists started the industry. Their No. 1 job was to make electricity. Then the financier came in to help and distribution claimed a great share of their attention. Then the opportunity to *sell* more than ever before became increasingly important. It called for different types of thinking and action than the industry had shown in the past and it is still calling—for retailing involves new problems. There we deal with John Q Public—and he is, as I said before—no abstration.

Sure, I generalize here but I wanted to cover history a bit because what Walter Lippman calls the "acids of modernity" are eating into our former complacent busyness — they are undermining the old philosophies — the old patterns of our work family—as they are changing the social consciousness of our home families.

These things don't happen over night. They are trends—not phases.

Electric Companies' Advertising Program

Six years ago, 52 companies, sensing some of the new patterns that the "acids of modernity" were etching, started the Electric Companies Advertising Program, which we, borrowing alphabetical laxity of the New Deal, now call ECAP. It was intended to provide, and has done so I believe, a national backdrop of importance and authority against which

1. The companies' local activities would be more favorably highlighted and
2. Provide a strong wall of opinion to offset unwarranted criticism and maljudgments.

That work is continuing. Under current conditions it cannot stop.

ECAP now has 174 participants. Most of you before me are of companies who actively support the program with astonishingly fine cooperation. Judge

McAfee of Union Electric said once "that we do a great deal of talking in this business, but we seldom act. It seems to take a crisis of some sort to produce the action."

Thank goodness there is this much recognition that there is an ailing patient.

ECAP is still far from complete. While the majority of the meters of the country are represented in it, there are still many fine companies who have not yet decided to carry their share of the work. We should expand our magazine list. We should have an Industry Motion Picture—maybe one every two years. We should have night-time radio. All that means more participants.

But this ECAP program got started and from it has stemmed many things—

1. A greater spirit (and I think I can state this without fear of any contradiction) of unity within the industry than ever before existed.
2. A national informative campaign in magazines and on the radio that has raised the level of appreciation of the public toward the taxpaying business managed companies.
3. A mat service for local newspaper use that last year was used by well over 100 companies to the extent of over 20,000,000 circulation at least 12 times a year.
4. A similar radio commercial service.

But in the sixth year we are just getting started. We have much to do. We have made friends and increased appreciation. We now, while holding these friends, must aim for understanding of our problems by the public. We used to believe that politicians as such used to stir up public opinion against big business—the truth is that the politician is largely a mirror of public opinion. He rides to glory or falls on his face on the accuracy of his interpretation of public opinion.

ECAP is not alone in the effort to persuade the people that the preservation of the electric industry is the way to help produce the more abundant life that the people crave. Other avenues to that end are being offered with tempting bait. Change has many allures. We may be out-traded too for we use *understatements*, with responsibility in back of them and we work with an industry that I love but one that doesn't always look at fundamentals even through similar glasses.

We can win though. We can protect American enterprise and our way of life—not by railing at objectionable foreign philosophies but by showing how much more practical and beneficial our way is. But you have to help—its your home—your job at stake and you can't expect your neighbor or your neighboring company to do it for you.

I start assuming you are "our side." Good public relations stems from within—no amount of advertising can or will create it.

First you must have the facts—know how people *think* in your territory as well as nationally. Learn and use surveys.

1. Adapt and carry out a continuous informative effort using all media available.
2. Make sure through means that Dr. Robinson has talked about that your employees understand the battle.
3. Encourage the "up and comers" especially to take part. Show by example through them that the "opportunity" part of our story is true and workable.
4. While this is your battle — you can't fight it alone. Join up with every worthwhile community enterprise—that's enlightened selfishness. Join up too with your industry's preservation efforts—that means ECAP. Cooperate with understanding with those companies who are directly on the firing line today. You may be relieving them tomorrow.
5. And put your faith in an axiom—that if the Americans are told the truth their judgment and their subsequent action will be fair and square. You have to have an informed public—if they are informed I believe they'll be on our side. Then we can promise the people the ends they are looking for with better assurance than anyone else.

If the election of 1946 shows us anything in the six months that have passed it should teach us that industry—ours or all of it—does not belong in partisan politics. It belongs to the people. Their success, their hopes, their welfare are tied up in the success of industry. I think the younger minds may see this more clearly than older heads for it is a way of thinking that is still young—far far removed from the outmoded "public be damned" attitude. Maybe its the "acids of modernity" working here too.

Northwest Electric Association Holds Accounting Meeting

GEORGE M. GADSBY, President of Utah Power & Light Co., addressing the annual meeting of the Accounting and Business Practice Section, Northwest Electric Light & Power Association, in Salt Lake City, May 21-23, 1947, told the group that accounting executives must originate over-all programs in the field of finance and operation, and that management will welcome having such programs for consideration by the responsible heads of companies and Boards of Directors.

A feature of the meeting this year was a display and demonstration of new accounting machines and equipment, with 10 leading manufacturers exhibiting their latest models.

The new 9100-figure writing, adding and addressograph machine of the Addressograph-Multigraph Corp., was explained by C. F. Margach, Cleveland.

H. S. Gifford, I.B.M. Co., Dallas, Texas, in telling of new developments by that company last year, said they were based on two definite objectives: (1) to mechanize all routine clerical operations; (2) to produce accounting machines capable of broad utilization on all phases of accounting, or as an integrated accounting machine unit for all functions.

J. W. Hill, Remington Rand Inc., San Francisco, displayed and talked on the application of new Kardex equipment. Other demonstrators of new equipment were Burroughs Adding Machine Co., Friden Calculator Co., Jones Chart Service, Marchant Calculator Co., Monroe Calculator Co., National Cash Register Co., and Pitney-Bowes, Inc.

A discussion of depreciation accounting lead by E. F. Heim, Utah Power & Light Co., brought out the systems in use by member companies and present day trends.

New wrinkles in customer's accounting and collection were discussed under the leadership of J. E. Winton, Washington Water Power Co., bringing out some of the following points; collections are expected to grow worse as time goes on and all companies are stiffening up their collection procedures; some com-

(*Continued on page* 276)

Security Within Industry

By Dr. Adam S. Bennion
Vice President, Utah Power & Light Company

An address before the Fifteenth Annual Convention of the Edison Electric Institute
Atlantic City, N. J., June 4, 1947

AT THE outset, let's take a look at this thing called *Security* in its true perspective. There's the Security which sustains; there is also the Security which saps the vitality. Security can safeguard but it can also enslave. Like Esau of old we can sell our birthright for a mess of "pottage of lentils" and like Esau we can "despise our birthright."

Security ought never to become a national fetish. It doesn't represent the summum bonum of national life. Mere Security is not America's ideal—it never has been. Plymouth Rock is not the symbol of Security. It was not Security which inspired the men of Bunker Hill—nor at Valley Forge, nor on the Plains of Abraham. No mere sense of security prompted the heroism of Iwo Jima. Such battles are won by daring and adventure and sacrifice. Those are the qualities which have made America great—they are what built a great breed of men. They led the Donner Party into California; they marked the Oregon Trail into the Great Northwest—they sustained my own people, who a hundred years ago pioneered Utah and transformed a desert into a garden. The glory of man is not Security but Achievement.

A Place for Security

And yet, Security has its place in the social and economic structure of a nation. All too frequently, men no longer own and operate their own estates. Nor do they keep shop in small institutions in which relationships are intimate and in which mutual understandings and obligations are simple and natural. In great organizations, men are more and more removed from management. The lone man is no match for the institution. And, unfortunately, in the past, in all too many cases, management has been more concerned about profits than about the welfare of men. Cases can be too easily cited in which institutions have taken the good out of men in their early years only to throw them in the discard against their latter years. Old age has looked menacingly

DR. BENNION

over the shoulder of all too many men and women.

"Security from the Cradle to the Grave" has become an abused phrase in more ways than in the parodies on the expression, but men are entitled to protection in their work against the hazard incident to employment in a highly complex social organization. Men of the twentieth century demand safeguards against the uncertainties of our involved civilization. There can be little doubt, that for our generation at least, the man who labors will insist upon collective bargaining and an adequate welfare program. Our generation is wedded to Security. That being true, business should not be stupid. Government for a dozen years has flirted with the electorate upon a platform of social security—and the flirtation has been effective—convincing—if not overwhelming. So much so, that men of our day are going to demand a program of security.

They will insist upon it, either from *Industry or from Government.*

You business men understand that if government provides the program of security, it will do so with your money. There is no magic in Washington. The Treasury can furnish only such moneys as are obtained from your institutions and other similar institutions through taxation. Governmental aid is never a gift—it is an assessment. There are two basic arguments against a governmentally sponsored program of security:

1. It is too costly—due to political controls and manipulations with their excessive payrolls and their red-tape involvements.
2. When the government nurtures us, it deprives us of our freedom. The necessary controls make that inevitable. No one has more forcefully driven that truth home to me than a widowed mother of six children in the northern extremity of my home state. She evidently has lived under straightened circumstances for years but she said she preferred to bring the children up on simple fare of her own and their providing because, as she put it, "I want my children to eat our own bread, for I have learned that when anyone else gives us a slice of bread, he takes from us a chunk of our liberty."

Planning for Security

And so I come to you today with the conviction that American business should include in its plan of operations provision for the security of its employees. All other things being equal, the program set-up should be launched upon the principle of mutuality of interests. Both management and men should contribute mutually to the machinery set-up. In that case the provisions established smack not at all of charity and they command full-hearted participation and support.

For twenty years now I have been trying to find out the greatest concerns of the men and women who work for us. Under this assignment today I have been checking the programs of representative institutions to see how they

have responded to the needs of employees. The bibliography attached hereto will provide interesting reading for those of you who desire to analyze the problem before us more exhaustively, but for what they are worth I give you, in a kind of home-made way, these 6 considerations which seem to reflect what is in the minds of the men and women with whom it is my privilege to be associated.

First of all, there is the job itself; Its Tenure, Pay, Working Conditions, Advancement, Fellowship.

Tenure

When men talk of security, they like to feel that, barring great reversals, such for instance as a major depression, they can count on going right on working. Not to know whether he may be fired tomorrow—or next week—or next month—is a menacing thought. Through the use of tests, endorsements, interviews, scientific inquiries, and trial employment, it ought to be possible to make pretty sure that a given employee is wanted and needed. I like to say that it should be very difficult for a man to get a job with us—and that it should be almost impossible to lose it. For cause, yes—but not because of whims or because of faulty employment methods. It is a matter of pride with us that of our 1500 employees 438 have been with us more than twenty years.

Pay

After all, men live by the money they make. A unique sanctity attaches to a man's pay. His family depends upon it. Their whole social well-being rests upon it. To those of us who operate under a unionized relationship, there is the constant vigilance of union representatives who undertake to see that men are compensated adequately for the work they do. But may I commend to you the merit of some kind of Job Evaluation Study. For the past year we have given careful consideration to such a study. It is a systematic analysis of each job in an organization in its relationship to all other jobs. Factors which determine the worth of a given job are carefully considered—not by one department head alone, but by a group of responsible men representing every department in the company under the guidance of a Job Evaluation Counselor. Personalities are eliminated. So are bias and favoritism and prejudice. Then, too, pay scales of the company can be compared with typical going wages in the community and with corresponding wages in comparable institutions elsewhere. Job evaluations include the reactions of employees themselves, of their immediate superiors, of local managers, of district managers, of the working committee under the leadership of the Director of Personnel, and finally of the union and of management itself.

Under such procedure, there is the satisfaction that we have made wages as fair as it is humanly possible to make them. Every thoughtful man knows the implications of attempting to put price tags upon fellow human beings. And yet, they must be paid upon some kind of schedule.

Working Conditions

Making allowances for certain hazardous occupations and those callings which must be followed under more or less adverse circumstances, we are all of us agreed that men should work under conditions conducive to health and well-being. Adequate lighting, good ventilation, freedom from exposure and disease-producing environment — all these things call for eternal vigilance and considerate attention. The sweat-shop and the gas-threatening hole in the ground are *yesterday's* hazards.

Advancement

Advancement — the opportunity to grow and develop—is one aspect of security which merits much more consideration than it receives. Not only are employees entitled to intelligent direction, training and supervision on the job under some such plan as JIT, found so valuable in war days, but they can be stirred to growth under a system of courses for advanced study. Our own company offers to share the cost of any course related to our industry which fifteen employees will band together to take during any season. For such a course we undertake to secure from our State University or other institution of learning the most capable instructor available.

In passing, may I make the suggestion that, in my judgment, one of the most crying needs in industry today is to set up a system of merit rating under which promising young men of outstanding capacity can be given the opportunity to move ahead in keeping with their capabilities, and not be held to the pace of the run of the mill. Unionized institutions will forfeit their claim upon the brightest young minds of the nation if they are to be held to the limitations of advancement by mere seniority. Fortunately, some unions are alive to the need of recognizing the gifts of genius among men.

Fellowship

Men are entitled to the fellowship of desirable companions during the hours of work. They should be free from bullies, from disease, physical or social, and from annoying and hampering personalities. The satisfaction of congenial comaraderie is an essential in any program of security.

So much for the job itself.

Health

The second major concern of all of us who work is *Health*. May I suggest these simple keys to its preservation.

Most of our companies now require physical examinations as part of the employment procedure. May I commend the *annual physical check-up* as a guarantee against incipient sickness of all kinds and as insurance in the matter of continued well-being.

Then, too, employees may well be encouraged and directed in systematic programs of recreation — re-creation. Wholesome fun is not only a physical tonic—it pays rich social dividends. Baseball, soft-ball, bowling, skating, hiking, basketball, swimming, quoits, dancing, socials—these are but typical recreational activities which are great morale builders. They help make institutions the kind to which employees become attached.

Safety

Ours is an institution in which hazards abound. My twenty years have taken me into too many homes bearing the evidence of serious accidents, not to recognize the sacred obligation to teach safety. We have just completed an after-war revival of full Bureau of Mines training of 676 men. That experience convinces me that security lies in full understanding—of all the ways of Safety. Knowledge of the Safety Code—Full Training in First Aid—Full Training in Job Analysis—Careful Day by Day Preview of every job done—are musts in the field of safety as applied to real security.

Sickness

In spite of best laid plans, employees will get sick. From mere colds to long drawn out hospital cases with attendant operations, employees suffer the ills

common to mankind. Without aid—without a carefully worked out plan—sickness can become a tremendous burden. In the past, many an employee has struggled for years to surmount costs imposed by operations and long stays at the hospital.

Present practice suggests two provisions for protection in this field. At a very nominal cost, employees can enjoy the benefit of doctors' consultations either in their own homes or at the office of the doctor. A small monthly fee, shared jointly by management and employee, keeps the doctor bill from mounting. Plans for this service are available, although some of them are as yet experimental.

The second provision—now well established and surely a benediction to employees and their families—is a comprehensive hospitalization program, including hospital room, surgical fees, and incidentals, such as anaesthesia and operating room. Many companies provide this service free and allow employees to pay the cost of extending the benefits to their families. The plan works excellently and safeguards employees against what may easily become staggering crises. A $300-$400 bill can become a burden to a $200-a-month employee with a family to provide for.

Old Age

The fifth concern of all of us is old age. No one can stop the clock of time—no one can stay the march of the years. Youth gives way to middle age and maturity waits just around the corner.

Thoughtful men and women have always been concerned about their later years. There is a real dread in the hearts of men as they contemplate the possibility of "over the hill."

Here again progressive institutions have worked out two helpful solutions:

A Retirement Plan. Provisions covering retirement for past service are relatively costly—but inevitable in any equitable procedure. Future service protection can be picked up along the way. So many companies have solved this problem that it needs no long discussion here. A retirement program not only is a major factor in the complete security provision for present employees, it opens the door to bringing in of new, young employees as replacements. Under such a plan we neither discard valued older employees nor slow the wheels of progress by keeping on employees beyond their years of vigorous activity.

A Thrift Plan. Under such a plan, employees are encouraged to have payroll deduction made of such amount as they feel they can afford to apply on the purchase of a straight annuity or an annuity with insurance attached. A little saved along the way will grow into substantial payments by the time of retirement. The genius of the program is to save first before the money is in hand to be available to supply what so often are *wants* rather than needs.

Then, too, the regularity of saving becomes almost magic.

Death

And that leads me to our concluding consideration — really the concluding consideration of all of us. Death not only is inevitable—its consequences can be so vital and so permanent. There was a time when, if the head of the family died, only distress stared his dependents in the face. Now, progressive companies are doing much to take the economic sting out of death.

At very nominal cost, mutual aid protection can be carried so that instead of the old custom of "passing the hat" adequate burial expenses can be provided for so that funeral costs are no longer a harassment.

And of course, group insurance programs are now available at so nominal a cost that no employee should go without what amounts to very adequate protection. At 60¢ per thousand, employees can safeguard their families in amounts from $5,000 to $10,000 without hardship.

Whatever other insurance an employee may carry, he can ill afford to deny his dependents the coverage of the modern group policy.

In our company it is a matter of great satisfaction to see the race by two men to the home of an employee taken in death—one to deliver the mutual aid check to tide the family over burial costs; the other to deliver the first payment in settlement of the group insurance policy.

These six, then, appear to me to be major concerns of the men and women who work for and with us: The Job Itself (Tenure, Pay, Working Conditions, Advancement, Fellowship); Health, Safety, Sickness, Old Age, Death.

Fortunately, they can be met. And as they are—to the mutual benefit of employee and company—they bind us together in bonds that survive all the strains of a complex civilization.

BIBLIOGRAPHY

AMERICAN MANAGEMENT ASSOCIATION, *New Responsibilities of The Personnel Executive*

BANKERS TRUST COMPANY, *106 Retirement Plans*

STUART CHASE, *Men and Machines*

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY, *Rates and Earnings of Employes*

NATIONAL INDUSTRIAL CONFERENCE BOARD, *Personnel Practices. Plans for Rating Employes, Job Evaluation*

E. W. PAHLOW, *Man's Great Adventure*

GEORGE HERBERT PALMER, *Altruism*

SCOTT, CLOTHIER, ET AL, *Personnel Management* (An excellent Bibliography)

TEAD, ORDWAY, & METCALF, *Personnel Administration*

J. E. WALTERS, "Job Evaluation," *Mechanical Engineering*, Dec. 1938

H. FREDERICK WILKIE, *A Rebel Yells*

DALE YODER, *Personnel and Labor Relations*

Recent Rate Trends And Rate Research Committee Activities

(*Continued from page* 251)

tomers and classes of users and the characteristics of the value of service.

It is not my purpose now to enter into a discussion of rate-making but only to allude generally to the complex problem involved as having a bearing on both the importance and the limitation of the activities of the Rate Research Committee. Much of the problem of rate-making is common in principle among the several members of the utility industry. To this extent it is possible for representatives of the industry to discuss together their mutual problems and benefit by the research and experience of each other. To a considerable extent the problem of rate-making may be said to be indigenous, that is, especially inherent, to each individual utility concerned, due to the utility's particular circumstances, which may involve its own system characteristics, its customer's load characteristics, its financial structure, its regulatory situation, et cetera. There are limits, therefore, to which the mutual consideration of rate problems can be carried, and this should be realized in considering the nature of the ouput of an industry group such as this.

Factors Affecting Relocation of Industry

By H. F. Rech
Director, Power Section, General Motors Corp.

An address before the Fifteenth Annual Convention of the Edison Electric Institute, Atlantic City, N. J., June 5, 1947

IN DISCUSSING the subject—"Factors Affecting the Relocation of Industry"—my remarks will deal with the automobile industry, and specifically General Motors, as more than 20 years of my activities have been along this line, and these remarks may not hold true for all other types of industries.

Originally, most of our large industrial operations were not located by any scientific investigation, or located due to studies of market conditions. The automobile industry got its start in Michigan, partly because Henry Ford lived in Detroit and this was the logical place to start his operations. The Ford operations naturally drew large numbers of mechanically minded young men to this area and due to this available labor, the other automobile plants were drawn to Detroit and to the Michigan locations. The Studebaker plant was located at South Bend, Indiana, due to the old Studebaker Wagon Works operation there. The Canadian General Motors operations are centered in Oshawa—a small town near Toronto—due to the old McLaughlin Buggy Works which was in operation a good many years before the automobile was designed.

Original Locations

At all of these locations, transportation facilities—both highway and railroad—had been developed. Small industries had located nearby. Power lines and utility services developed. Small towns had developed, which produced a labor market and gave a firm foundation for the automobile plants to expand rapidly. Most of the small industries were very easily converted to the manufacture of small parts required for automobile assembly operations.

Many of the accessory plants, such as electrical equipment, gear and transmission plants, etc., were developed from high-grade machine shops, which were supplying parts, and building farm machinery.

The tire industry centered near Akron, Ohio, due to the early development of rubber products in this area,—and skilled labor, familiar with rubber operations, attracted the large tire manufacturing plants to expand in this area.

MR. RECH

All of the aforementioned industries use raw materials which can be transported easily by rail and are not bulky materials, such as iron ore, sand, limestone, and the type of materials which enter into steel operations.

The steel industry is an entirely different problem. Large quantities of heavy raw material, such as iron ore, limestone, scrap steel, etc., are moved great distances, more economically by water because of the low transportation costs. Inasmuch as large quantities of coal are required in the immediate vicinities of these natural resources, boats carrying raw materials down the lakes can carry coal on the return trips.

The glass industry also faces the problem of transporting great quantities of raw materials. Therefore, the location of glass plants necessitates sites near the raw material sources.

In the last few years, or since World War I, a great deal more thought and study has been given to the location of new industrial plants and the type of industry, in most cases, has a bearing on the location, as well as the end use of the product.

The change in the labor picture has been a deciding factor in location of a great many of these new plants. As an example, when certain types of plants, such as a foundry operation, are under consideration, a study must be made of the surroundings to determine the reaction of the people living in the community. The disposal of foundry sands and waste products over a long period of years must be considered. Large quantities of water are required in most cases for sluicing these waste materials. Certain communities do not have the type of labor who would be interested in foundry work.

Prior to a recent decision on the location of a foundry in central Ohio, we advertised in the local papers of three acceptable cities to determine the number of people interested in a position or job in a foundry, and meetings were held with the Chamber of Commerce, Mayor and Council of the cities under consideration to get their reaction and be sure of full cooperation before a site location was approved.

Stream Pollution Problems

In locating plants with large plating operations where large quantities of water are required, the question of stream pollution and waste water control is a factor for consideration. A few years ago such plants could be located on streams having sufficient capacity to meet requirements and with very little after-treatment the waste water could be returned to the stream.

Due to the increased activities of the stream pollution committees in most states, as well as the Isaac Walton League activities, and other health department operations, the general public is definitely resentful against stream pollution—whether from the palatability of

drinking water, the existence of wild life, or general appearance. The willingness of the public to be tolerant of existing nuisances, present during the war, is rapidly disappearing. Most municipalities are now establishing fees for use of sewers by industry and already over 100 rental systems are in effect in cities and villages in the State of Ohio. Bills are being prepared by the health departments and conservation departments controlling private wells, city water supply wells, and rivers.

There is a bill before the House sponsoring an Ohio River Valley Water Sanitation compact covering Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Tennessee, and West Virginia, setting up a commission to control and reduce pollution of the Ohio River. Today the State of Ohio has 16 central office engineers, 10 district office engineers, and a large staff of field engineers working on waste water control to determine a reasonable use of streams and waterways.

All of this activity means increased cost of waste water control equipment and plant investment for location of synthetic rubber, plating, by-product coke plants or any other type of plant in which water is a major part of the operation.

Very small percentages of some of these waste materials are objectionable. One part in 50 million of phenol can be readily tasted. Chlorine is also objectionable. One part per million of chromium salts or cyanide is detrimental to wild life. Very small quantities of oil will either cause discoloration or objectionable contamination of waste water.

Production Factors

The size, weight, type of product—whether rough castings or highly finished surfaces—must be considered in the location and design of the plant. Freight rates must be studied carefully in determining locations, as the source of raw material and the market for the finished products must always be very carefully analyzed. As an example, under old methods of operation steel—which is produced in the vicinity of Massilon, Ohio—had been shipped to Connecticut plants for processing and manufactured into bearings, then shipped back through Ohio as a finished product to plants in Ohio, Michigan, and Indiana for assembly. Under our new setup this steel from the Massillon, Ohio, area will be shipped to Sandusky, Ohio, where it will be converted into bearings on its way to the Michigan and Indiana locations.

About the same condition existed in the past on body steel. Steel sheets were rolled in the Youngstown and Middleton, Ohio, areas—shipped to Flint and Grand Rapids, Michigan, where it was formed into body stampings—then shipped back through the original areas to the assembly plants. Under the new setup, steel produced in Middleton, Ohio, will be formed ready for body assembly operations at a new plant at Hamilton, Ohio, and then shipped direct to assembly plants without any loss in transportation mileage.

Storage batteries are now being produced in New Brunswick, New Jersey, for use at our Framingham, Mass., Tarrytown, N. Y., Trenton, N. J., Baltimore, Md., Wilmington, Del., and Atlanta, Ga., assembly plants, as well as furnishing the export battery shipments. All service batteries for the eastern area will come from this New Brunswick plant.

Assembly Plant Location

The method of locating assembly plants is to make a survey of automobiles in use in the different areas of the United States by groups and then attempt to locate assembly plants in the center of the high density areas to serve the areas with the least possible re-handling of materials. We have been following this practice in Chevrolet operations for many years as there is an annual production volume to justify such operations.

Due to the volume of the combined Buick, Oldsmobile and Pontiac production, assembly plants for this group have become practical. The survey of this group proved there was justification for such an assembly plant at Framingham, Mass., to serve the Boston and New England areas. The Linden, N. J., plant has been in operation since 1937 to serve the metropolitan New York and New Jersey areas. The Wilmington, Del., plant will serve the Philadelphia, Washington, and Pennsylvania areas. A plant is now operating in Kansas City, Kansas, to serve the St. Louis, Kansas City, and the mid-western area. A plant has been in operation at Los Angeles since 1935 to serve the extreme west. The parent factories at Flint—Lansing—and Pontiac, Michigan, serve the Michigan—Ohio—Indiana — and Illinois areas, as well as the lower volume models and some of the export cars.

Industrial Decentralization

There are a great many advantages to decentralization of large industrial operations. The employment of labor in areas where you expect to sell your products, as well as the best delivery and service possible by spreading out of operations, is a distinct advantage. We now operate 102 plants located in 52 cities in 15 states; also four plants in Canada, as well as our foreign operations. We have more than 300 thousand employees at the present time. During the war we exceeded 465 thousand employees. Our stockholders now outnumber our employees. We now have in excess of 430 thousand.

In order to help you visualize a modern automobile assembly plant, I would like to describe one of our most recent Buick - Oldsmobile - Pontiac assembly plants now in its final stages of completion at Wilmington, Delaware.

This plant is located on 120 acres of land. The floor space area is approximately 1,200,000 sq ft. Six acres of this site are required for employees' parking space as between 80 per cent and 90 per cent of the employees now use automobiles for transportation to and from the plant. About 2 acres are required for the storage of new automobiles ready for delivery and 6½ acres are required for the haul-away service for new cars. A plant of this size will require from 2500 to 3000 employees and will produce approximately 40 cars per hour. In order to maintain a continuous flow of material to keep this plant in production, the railroad company must install yard track facilities for 300 incoming railroad cars, as well as 150 outgoing loaded cars. There are also 8200 ft of railroad track on our own property.

A plant of this type requires electric service of about 7000 kva, which consists of seven 1000-kva substations located at load centers. A power plant with a boiler capacity of 180,000 lbs of steam per hour, consisting of three 60,000 lb per hr units. Compressed air capacity of about 6000 cu ft per minute, consisting of three 2000 cu ft per min units. A power plant of this design gives the flexibility needed for this type of operation. Due to the paint spray operations it is necessary to supply approximately 1,000,000 cu ft per min of fresh filtered air which must be tempered to about 80F. The main air sup-

ply to the building will be approximately 900,000 cu ft per min.

In order to maintain conveyor operation for satisfactory line production, the difference in elevation of the floor in this entire building will not vary more than one inch per 100 lineal feet of building length.

Shipments to Assembly Points

A plant of this type will assemble at least 6 different complete types of automobiles—two lines of Buicks, two of Oldsmobiles, and two of Pontiacs. The component parts materials come in from the manufacturing plants located in different parts of the United States and are scheduled so that a minimum of stock will be maintained for each type of car produced.

The motors, axles, and transmissions will be shipped in carloads to the assembly plant from Flint, Lansing, and Pontiac, Michigan. The Hydra-Matic transmissions will come from Detroit. The frames come in carloads from Milwaukee, Wisconsin and Cleveland, Ohio. The bodies will come completely unassembled from the metal stamping plants either in Grand Rapids, Michigan, or Hamilton, Ohio.

There will be a complete carload shipment of each type of body stamping to make up the completed body. In other words, there will be one carload of top stampings, one of front quarter panels, one carload of floors, etc. Fenders, hoods, and miscellaneous sheet metal stampings will come in carloads from parent Michigan plants. Lamps and electric starters, generators and ignition equipment from Anderson, Indiana. Hub caps and bumpers from Syracuse, N. Y., or Elyria, Ohio.

Steering gears in carloads from Saginaw, Michigan,—tires from Akron, Ohio, or Detroit, Michigan,—electric wiring harness from Warren, Ohio,—batteries from New Brunswick, N. J.,—upholstery trim material from Connecticut mills,—instruments and miscellaneous equipment from Flint, Michigan.

All of the welding, bonderizing, trimming, installation of instruments, etc., will be completed in the assembly plant. The body will be completely assembled in one department and the chassis complete with wheels, tires, fenders, and hood will be completed in another department. These two assembly lines meet, and the completed car is driven from the end of the assembly line ready for final inspection and delivery.

You can understand from this picture the enormous saving in transportation facilities. One freight car can handle parts for more than 100 automobiles, whereas one box car will accommodate only 4 larger size, and 6 of the smaller, completed automobiles.

In order to carry out this complete operation, a tank farm is necessary to store lubricating oils, gasoline, fuel oil, paints and thinners, anti-freeze, and solvent cleaners. About 30 different paint colors are kept circulating and ready for use at all times.

Cars of all different colors come along the line the same day. A dispatching system is used so that the foreman who starts the work on the chassis assembly line will know what color wheels and body color combination will be ready when the chassis reaches the point for combining the body and chassis.

Electric Service Factors

Electric service is a major consideration in the location of any type of plant. It is always desirable to have a source of electric power from at least two directions, as interruptions to most operations cause serious delays, a loss of material in process, and in some cases thousands of manhours. We feel a great many electric utilities do not give the proper consideration to rate structures for industrial plants and do not appreciate the increase in domestic loads and improvement in system load factor resulting from these industrial loads. Some utilities in setting up rate schedules favor domestic and commercial customers, penalizing industries. A few utilities give industries proper consideration and set rates for domestic and commercial customers which do not cause industry to carry all of the burden.

It is also necessary to have gas available for carburizing operations, porcelain furnaces, atmosphere furnaces, and miscellaneous heating requirements. In most industrial plants where satisfactory gas service is not available, liquefied-petroleum-gas storage systems must be installed, either as standby or for continuous operation.

I would like to give you a brief picture of the overall General Motors utility usage. The purchased electric power in the past 12 years has increased from about 500 million kwhr annually to 2½ billion kwhr annually. Our coal consumption has increased from 600,000 tons to 1¼ million tons annually. Our gas consumption has increased from 1¼ billion cu ft to 10 billion cu ft annually. Water has increased from 850 million cu ft to 3,600,000,000 cu ft annually.

The cost of utilities at the present time is approximately $50 million per year. This cost is divided approximately as follows:

	Percent of cost
Electricity	44
Steam	32
Gas	8
Compressed Air	7
Water	4
Fuel Oil	5

Although we have approximately 300 steam boilers installed, we do not generate electric power, with but two exceptions—at Buick-Flint and Chevrolet-Detroit, where we have large steam-operated drop forging hammers, we generate a small quantity of electric power as a by-product. The total power generated in this manner is less than 5 per cent of our requirements. We also generate approximately 1½ per cent of our required electric power by General Motors-Diesel equipment. The policy of General Motors has been to purchase utilities from the local utility companies, who in turn are good customers and use large quantities of our products, and in a good many cases, distribute General Motors household appliances.

Northwestern Electric Ass'n Accounting Meeting

(*Continued from page* 270)

panies have eliminated pro-rating of part-month bills; most companies are finding pay stations increasingly advantageous; there is a trend toward Saturday closing of offices and regular rest periods during the day for employees.

With V. T. Montgomery, Idaho Power Co., in the chair for a discussion of general accounting, Ellis Anderson of that company showed some of the preliminary microfilming of company records.

Allan Elder, chairman of the Classification of Accounts Committee, reported his committee had rendered one opinion recently and invited questions on borderline cases of interpretation.

Rate Reduction Publicity Program Does Effective Job

Its "Secret of Success"

By M. H. Frank

Vice-president in charge of Employee and Public Relations, Wisconsin Power and Light Co.

WHEN the users of electricity realize that the average price has been reduced and that they receive much more electricity for their money today as compared to 20 years ago, they will be inclined to feel more friendly towards the Company—in addition they will use more of the service which results in more revenue to the Company.

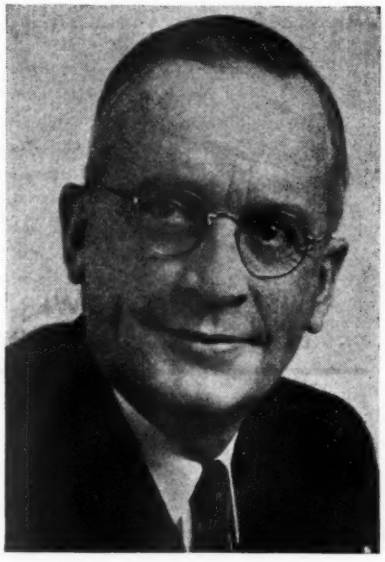
I. *The Problem*

The object of the Rate Reduction Publicity Program was to convince the customers that the average price is less than half of what it was 20 years ago.

The average cost of household electricity to customers of the Wisconsin Power and Light Company has dropped from 9¢ to 3.6¢ per kilowatthour in the past 20 years. However, comparatively few customers realized that they received more than twice as much household electricity for their money today than they did in 1926.

It was decided to make a preliminary survey of the typical residential customers in order to determine their present attitude on this matter. The survey was conducted by an independent agency among 932 representative customers. The question was asked, "Would you say electric rates are higher or lower than they were 20 years ago?" with the following results:

Twenty-six per cent said rates are higher—39 per cent said rates are lower



MR. FRANK

—21 per cent said rates are about the same—and, 14 per cent had no opinion.

A national survey conducted in 1945 by the Opinion Research Corporation showed similar results to a similar question. In this case 22 per cent said rates are higher—39 per cent said rates are lower—15 per cent said rates are about the same—and, 24 per cent had no opinion.

The results of these surveys definitely prove the need of an educational program on the question of the trend of rates as a result of reduced rates and the increased use of the service.

II. *The Method*

The normal publicity program had been carried on during the 20-year period with more emphasis on the reduction in the actual price of electricity during the past 10 years. The survey indicated that this program was not doing a satisfactory job. As a result a special publicity program to make customers aware of the fact that prices were actually reduced was developed and carried on during September, October, and November of 1946.

The following media were used to tell the story: Newspaper Ads, Window Displays, Electric Bill Inserts, Radio. Attachment to Electric Service Bills, Dealer Magazines.

The attachment to electric service bills (Fig. 1), which was the focal point and climax of the campaign, was used in November. This attachment was stapled to the regular monthly bill as illustrated in the advertisement SP40-46 (Fig. 2) and showed what the customer would have paid 20 years ago for the amount of electricity covered by his current bill. The actual rates in effect 20 years ago were used in preparing the attachment. To make the difference noticeable and outstanding, the cost at today's rates was inserted alongside the old cost of 20 years ago.

This attachment was the only medium

MONTHLY BILL FOR SERVICE RENDERED BY
WISCONSIN POWER AND LIGHT COMPANY

WISCONSIN POWER AND LIGHT COMPANY

Dates of Readings Present	Previous	Class	Meter Readings Present	Previous	TOTAL USED	1st Step	2nd Step	3rd Step and Over	Class	GROSS BILL*	NET BILL*	Class	GROSS BILL*	NET BILL*

LOOK! THIS IS WHAT YOU WOULD HAVE PAID FOR THE SAME AMOUNT OF ELECTRICITY IN 1926 → ____ FOR THE SAME AMOUNT TODAY → ____

Meter readings and amount used are shown in hundreds of cubic feet for gas and kilowatt-hours for electricity.
* Fixed charge included in Gross and Net Bills.
Information on rate schedules may be obtained at the Company's local office.

CLASS OF SERVICE
RS—Residence Electric Service
WH—Electric Water Heating
CS—Commercial Electric Service
PR—Standard Power Rate

RESIDENTIAL RATES IN THIS COMMUNITY HAVE BEEN REDUCED 7 TIMES SINCE 1926

Previous Bills		Previous Bills	
Merchandise		Merchandise	
Service and Repair		Service and Repair	
TOTAL		TOTAL	

Fig. 1

that involved an expenditure over and above current monthly expenditures. Newspaper ads, window displays, bill inserts, radio and "Dealer Doings" are used regularly each month during the year and their expense was not increased because of this public relations program.

A budget of $3,215.00 was allocated for the bill attachments necessary for the 110,000 residential and commercial customers of the Company. This included the cost of preparing new billing charts using 1926 rates, the cost of printing the attachments, and the cost of actually figuring the bill on the old and present rates and extending the information on the attachment. The actual cost was well under the estimate being only $1,355.55.

III. *The Results*

A survey was made by the same independent agency after customers had been exposed to the above public relations program. This was made among 612 representative customers.

The same question was asked: "Would you say electric rates are higher or lower than they were 20 years ago?"

THE RESULTS

Before Publicity Program		After Publicity Program
26%	*Said rates are higher*	18%
39%	*Said rates are lower*	59%
21%	*Said rates are about the same*	18%
14%	*Had no opinion*	5%

Of the 59 per cent who said rates were lower, 79 per cent volunteered that they had recently seen publicity which had caused them to express this opinion. If we apply this same improvement (39 per cent to 59 per cent) to the total customers we find that 20 per cent of 110,000 or 22,000 more customers believed their rates were lower than before the program. This was accomplished at a cost of about 6¢ per customer affected.

This program was so successful that the management has requested that it be conducted each year. It is their opinion that for the comparatively small expense involved, the program is outstanding in building revenue and good will for the company.

Added significance of the results of this particular program is seen in the fact that no such advance had been made during a 10-year period of wide use of institutional advertising by the company, and by the industry at large, to point out this very condition. The fact is, management of this company had not observed any marked change in public attitude toward electric service rates and charges during even the last 4 years, a period when national magazines and radio advertising had been used liberally by the industry to call attention to the fact that electric service is cheaper than ever before, and the Company had carried many of the magazine ads over into its more localized newspaper advertising.

Presumably, the "secret of success" lies in the fact that the climax of the campaign did not merely localize the situation but actually *personalized* it. The bill attachment brought it home to every customer that rate reductions and lower costs of electric service meant something definite and tangible to *him*. Here was a dollar-and-cents saving that had not merely benefited the nation, or the state, or city, not the rather indefinite "public" or the general welfare, but had left money in *his* pocket which otherwise would have been spent.

The national, state and local advertising prepared the customer's mind to better understand the meaning of the program when it was crystallized in dollars-and-cents effect on his pocketbook.

This was conclusive proof to the customer that the entire program did reflect a trend and that it was true as proven by his own actual bill.

Typical customers' comments were:

"Is this a fact? Doesn't seem possible."

"Nice work, Fred. On this basis 10 years from now we will receive a check instead of a bill each month. Keep it up, keep everybody happy. The service is O. K. Absolutely no kicks."

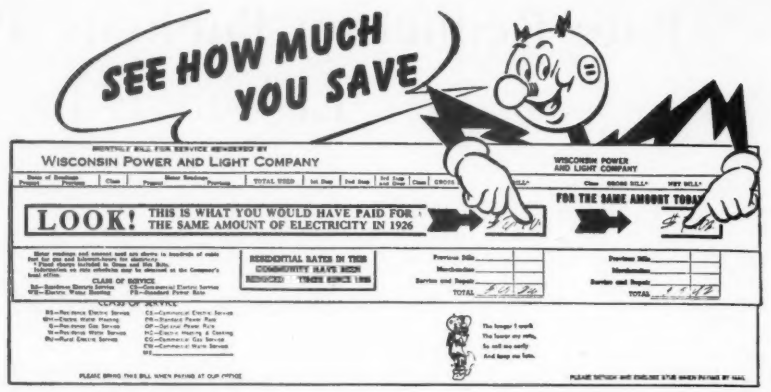
"My gosh, it is just half of what it would have been 20 years ago."

"Good job. People don't realize the good job you are doing."

Among the letters received was the following from a Beloit customer:

"Many things are accepted as a matter 'of course', yet when a kind deed is done there frequently is, at least, a 'thank you'—an expression of appreciation.

"Your reduction in rates: I suppose you have received hundreds of appreciative acknowledgements, and this note to you is tendered in the same spirit. The last bill that I received was, indeed, a very welcome revelation as to what really can be done—and done voluntarily. To those of us in the so-called 'white collar class', who have no John L. champions, pennies and dollars saved mean a very great deal—and I, personally, feel that the reduction in my bill was identical with a gift."


SEE HOW MUCH YOU SAVE
WISCONSIN POWER AND LIGHT COMPANY
LOOK! THIS IS WHAT YOU WOULD HAVE PAID FOR THE SAME AMOUNT OF ELECTRICITY IN 1926
FOR THE SAME AMOUNT TODAY
RESIDENTIAL RATES IN THIS COMMUNITY HAVE BEEN REDUCED TIMES SINCE 1926
WISCONSIN POWER AND LIGHT COMPANY

Take an extra look at your residential electric bill during November. It will show you how much you would have paid for the same amount of electricity using the rate in effect 20 years ago.

You'll be surprised at the savings. Maybe the steady downward trend in the price of household electricity hasn't been dramatic but it surely produces savings for you over a period of years.

Generally speaking the same amount of household electricity today costs less than half what it did twenty years ago.

WISCONSIN POWER AND LIGHT COMPANY

(Listen to the Electric Hour — "THE HOUR OF CHARM", featuring Phil Spitalny and his All Girl Orchestra, every Sunday, 3:30 P.M. over Stations — WBBM, WISN, WTAQ.)

Newspaper Advertisement EF-46-46
4 columns x 7½ inches

Fig. 2

PERSONALS

ALTON T. LITTLEFIELD, since 1936 general commercial manager of Central Maine Power Co., Augusta, has been appointed manager of division operations, a newly created position. His duties will also include certain responsibilities formerly assigned to the position of general superintendent. He joined the company in 1921 upon being graduated from the University of Maine, beginning as sales representative in the securities department. In 1923 he became editor of the "Exciter," the company's 29-year-old house publication, and in 1924 was made advertising manager and publicity director.

ROLAND W. HESS has been named general commercial manager of Central Maine Power, with headquarters at Augusta. He was graduated from Wesleyan University in 1926, and until 1934 worked in the statistical and auditing departments of the General Electric Company when he joined the New England Public Service Co., Augusta, Me., serving as traveling auditor for NEPSCO Services, Inc. In 1945 he was appointed assistant comptroller of the Central Maine Utility.

Announcement has been made of the election of T. E. ROACH to the position of executive vice president and general manager of the Idaho Power Company with headquarters at Boise.

For five years Mr. Roach was vice president and general manager of the Northwestern Electric Company, Portland, and previously had been president of the Washington Gas & Electric Company, Tacoma. When Northwestern was absorbed recently by the Pacific Power & Light Company, Mr. Roach was elected vice president of the latter company.

WILLIAM G. B. EULER, vice president in charge of operations of Pacific Gas & Electric Company has been appointed vice-president and general manager, effective July 1, in one of several personnel changes announced by President James B. Black.

A. EMORY WISHON, who will be succeeded by Mr. Euler, has been made executive vice president, assisting the president in general supervision and directing the department of general construction in a $300,000,000 expansion program.

Mr. Black also announced the retirement of R. E. FISHER, vice-president of public relations and sales, and the promotion of four P. G. & E. executives to vice presidencies.

NORMAN R. SUTHERLAND, manager of the company's San Francisco division since 1945, succeeds Mr. Fisher. Also named vice-presidents were DUNLAP D. SMALLEY, JAMES S. MOULTON and I. C. STEELE.

Mr. Euler, a native of San Francisco and a graduate of the University of California, began his utility service with the engineering staff of Great Western Power Company in 1910. He was general superintendent of Great Western's operations at the time of its merger with P. G. & E. and soon was transferred to headquarters in San Francisco. He became chief engineer in 1940 and vice-president in charge of operations in 1944.

Mr. Fisher leaves the company after 36 years of service, 25 as a vice-president. Prominent in California civic affairs, he currently is serving as chairman of the Bay Area Council and as northern California chairman of the national Committee on Economic Development.

Mr. Sutherland, a native of San Francisco, has been with the company since 1913, when he joined the San Francisco office as a clerk.

Mr. Smalley, who succeeds Mr. Euler as vice-president in charge of operation, has been with the company since his graduation from the University of California in 1910. He was general superintendent of the San Joaquin and Midland Counties properties of the company before his appointment last year as engineer of electric operation.

Mr. Moulton, executive engineer, was made vice-president and executive engineer. He has been with the company since 1921, having joined the San Joaquin Light & Power Corp. engineering staff following his graduation from Yale University. He later became executive engineer of the Great Western Power Company, then assistant to the vice-president and general manager.

Mr. Steele, chief engineer, was appointed vice-president and chief engineer. He began his employ with P. G. & E. in 1909.

ERNEST B. KIPP has been appointed superintendent of San Diego Gas & Electric Company's electric meter division. Following his graduation from the University of Utah in 1926, Mr. Kipp spent three years in the Westinghouse plants as a graduate student. Following special assignment work for the Central Arizona Light and Power Company, Westinghouse appointed him meter relay and instrument specialist for the Western territory. In his new position he succeeds WILLIAM H. TALBOTT, retired.

P. R. WILLIAMS has been elected treasurer of the Virginia Electric & Power Company and H. A. HITCH secretary. Mr. Williams succeeds GEORGE B. WILLIAMS, who retired on June 1 after 40 years' service as treasurer. Mr. Hitch succeeds RICHARD N. BENJAMIN of New York. JOSEPH V. MITCHELL, formerly assistant comptroller of the company, was elected assistant treasurer. Mr. Williams has been associated with a number of Stone & Webster properties since 1909. He went to Virginia from Beaumont, Tex., where he was treasurer of the Gulf States Utilities Company. He has been comptroller of Virginia Electric since 1934. Mr. Hitch spent the early part of his business career with the Pennsylvania Railroad. He joined the organization of the Eastern Shore Public Service Company at Salisbury in 1926 and since then has been affiliated with several other organizations in various sections of the country. His connections in the light and power field have included the properties at Marion, Ohio, and Virginia Public Service Company.

JOHN S. TUCKER has been appointed manager for the Connecticut Light and Power Company at Niantic succeeding the late James T. Sherlock. He was employed by the Narragansett Electric Light Company, Providence, Rhode Island, from 1916 to 1929; became superintendent of the C. L. & P. company's predecessor, the Central Connecticut Power & Light Company, at Essex in the latter year, and has been with the utility in various capacities since. THOMAS J. FLANAGAN has been named supervisor of welfare and personnel, reporting to C. J. Allen, vice-president of public relations; ROBERT E. LAGERQUIST becomes assistant supervisor of welfare and personnel; and JOSEPH R. MAHER is now supervisor of employee training and customer relations, reporting to Mr. Allen, whose headquarters are at Waterbury.

Accounting Division Meeting

(*Continued from page* 260)

rates are fixed by governmental authority and based largely on plant investment. Consequently, said Mr. Rodey, the usage has grown up without much consideration. As to the net plant balance sheet being "modern" accounting, he said that it is well recognized that utility accounting is in general far in advance of industrial accounting and that the present standard prescribed form of balance sheet for electric and gas utilities is actually the most genuinely "modern" form.

There was some general discussion, without any scheduled leader, on the question, "Is the Rise in Price Level Approaching the State Where Concerted Action by Utility Accountants Could Protect Investors?" Mr. Hasbrouck, Accounting Director of the Institute, read a few previously prepared paragraphs which he said were just tossed in to stimulate thinking. The burden of his comments was that too great subservience to an accounting convention that plant costs must never be restated might lead to plant accounts continually drifting away from the hard reality represented by costs stated in dollars of current purchasing power. He warned accountants not to ignore the seriously misleading nature of financial reports which completely disregard the effect of a permanent and substantial upward revision of the general price level.

In dealing with the question of revisions in the NARUC-FPC uniform systems of accounts, L. E. Reynolds, The Connecticut Light and Power Company, used a method of calling by name on individuals present, generally singling out his victim with a stinging phrase. His tactics resulted in a good deal of laughter, some swift retorts, and a pretty clear disclosure that the industry accountants are not anxious for general revisions in the standard classification at this time.

The concluding topic was a thoughtful paper by A. W. Hastings, Epsco Inc., entitled "Has Research Lowered the Sights on What the Depreciation Reserve Requirement Would be on Utility Plant?" Mr. Hastings replied to his own question definitely in the affirmative, pointing out that new studies on the effect of mortality dispersion in mass property units which make up about 60 per cent of the plant account indicate that whether the "straight-line" method of amortizing plant costs or some other method of depreciation accounting is adopted, " . . . the mortality curves are flatter than we had supposed, with correspondingly lower depreciation reserve requirements." This lowering of the depreciation reserve requirement is substantial and can make a very great difference in the amount of allowable earnings when the rate base is primarily the cost of plant less the depreciation reserve.

After the open meeting a short business session was held by the General Committee members present, at which a Nominating Committee's report was adopted as the recommendation of the General Committee for chairmen and vice chairmen of the Division's standing committees during the new administrative year.

CONVENTIONS AND MEETINGS

1947

SEPTEMBER

5-11	National Electrical Contractors Association, San Francisco, Cal.
8-9	Accident Prevention Committee, EEI, 420 Lexington Ave., New York, N. Y.
15-19	Illuminating Engineering Society, Roosevelt Hotel, New Orleans, La.
17-19	Indiana Electric Association, French Lick Springs Hotel, French Lick, Indiana
22-24	Meter and Service Committee, EEI, and Meter and Service Methods Committee, AEIC, Lord Baltimore Hotel, Baltimore, Md.
22-24	Northwestern Section, International Association of Electrical Inspectors, Eugene Hotel, Eugene, Ore.
25-26	Southeastern Electric Exchange, Fall Conference Engineering and Operation Section, Henry Grady Hotel, Atlanta, Ga.
25-27	Southeastern Electric Exchange, Engineering and Operation, Henry Grady Hotel, Atlanta, Ga.
29-Oct. 1	—Purchasing and Stores Committee, EEI, Henry Grady Hotel, Atlanta, Ga.
29-Oct. 1	Southwestern Section, International Association of Electrical Inspectors, Mission Inn, Riverside, Calif.

OCTOBER

6-7	Prime Movers Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.
6-7	Electrical Equipment Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.
6-8	American Gas Association, Annual meeting, Cleveland, Ohio.
6-8	Association of National Advertisers, Atlantic City, N. J.
6-10	35th National Safety Congress and Exposition, Chicago, Ill.
9-10	Transmission and Distribution Committee, EEI, Benjamin Franklin Hotel, Philadelphia, Pa.
13-15	Western Section, International Association of Electrical Inspectors, Mount Royal Hotel, Montreal, Can.
15-18	American Society of Civil Engineers, Fall Meeting, New Orleans, La.
20-22	Eastern Section, International Association of Electrical Inspectors, Seaside Hotel, Atlantic City, N. J.
21-23	American Standards Association, Waldorf-Astoria Hotel, New York, N. Y.
27-29	Southern Section, International Association of Electrical Inspectors, George Washington Hotel, Jacksonville, Fla.
27-30	National Electrical Manufacturers Association, Hotel Traymore, Atlantic City, N. J.
29-31	Southeastern Electric Exchange, General Sales Conference, Atlanta Biltmore Hotel, Atlanta, Ga.
30-31	Pennsylvania Electric Association, Electrical Equipment Committee, Benjamin Franklin Hotel, Philadelphia, Pa.

NOVEMBER

3-7	International Lighting Exposition, Stevens Hotel, Chicago, Ill.
21-22	New Jersey Utilities Association, Seaview Country Club, Absecon, N. J.

DECEMBER

1-5	The American Society of Mechanical Engineers, New York, N. Y.
3-5	52nd Annual Congress of American Industry, National Association of Manufacturers, Waldorf-Astoria Hotel, New York, N. Y.

JANUARY

26-30	American Institute of Electrical Engineers, Pittsburgh, Pa.

EDISON ELECTRIC INSTITUTE OFFICERS AND COMMITTEES

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